

PREDICTORS OF POSTSCHOOL OUTCOMES FOR STUDENTS WITH EMOTIONAL OR  
BEHAVIORAL DISABILITIES: RACE/ETHNICITY, FAMILY INCOME, GENDER, AND  
STUDENT AND FAMILY ENGAGEMENT

By

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degree of Doctor of Philosophy

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## Abstract

For decades, students with emotional or behavioral disabilities (EBD) have had consistently poor high school graduation rates and postschool outcomes in terms of employment, postsecondary education enrollment, and involvement with the criminal justice system (Wagner, Newman, Cameto, & Levine, 2005). In addition, compared to students who are White and/or whose families have high incomes, outcomes are generally worse for youth with disabilities who are African-American or Hispanic and/or whose families have low incomes (Newman, Wagner, Cameto, & Knokey, 2009). Using school and postsecondary data on students with EBD ( $n = 450$ ) from the National Longitudinal Transition Study-2 (NLTS2), this study used cross tabulations and mean comparisons to examine significant demographic differences among students with EBD in engagement (i.e., family and student engagement) during their school years and in outcomes after high school. In addition, logistic regression analyses were used to determine the predictive value of four categories of predictor variables on key postschool outcomes. Predictor variables included (a) demographic variables (i.e., race/ethnicity, family income, and gender); (b) negative student engagement (e.g., being bullied, being suspended); (c) family engagement at home and in school; and (d) positive student engagement (e.g., student connectedness to school, grades, involvement in extracurricular activities). Four criterion variables were examined: high school graduation, postsecondary education, fulltime employment, and involvement with the criminal justice system (i.e., arrest). High school graduation status was included in the models for postsecondary education, fulltime employment, and arrest.

Results showed that positive student engagement was associated with higher odds of graduating from high school and enrolling in postsecondary education, and negative student



engagement was associated with higher odds of arrest. High school graduation status was found to be a significant predictor of postsecondary enrollment and arrest, whereas family engagement predictors contributed little to the models in most instances. Results differed depending on the criterion variable (i.e., high school graduation, postsecondary enrollment, fulltime employment, and arrest): For example, student engagement had little statistical value for predicting fulltime employment. In addition, some significant differences in outcomes based on demographic variables (i.e., race/ethnicity, family income, and gender) were found to be reduced or negated when student or family engagement variables were included in logistic models; other differences persisted after the inclusion of the engagement variables. Limitations, directions for additional research, and practical implications are discussed.

## **Chapter 1: Introduction**

Students with emotional or behavioral disabilities (EBD) face a range of problems during their K-12 school years, including more restrictive educational placements, higher rates of disciplinary action, and lower high school completion rates than other students with disabilities and the general population (Wagner & Davis, 2006). When they leave high school, they enroll in postsecondary education (e.g., vocational programs, 2-year colleges, 4-year colleges) at rates below most other disability groups, as well as peers without disabilities; have low employment rates compared to other young adults with disabilities; and are more likely to be arrested and incarcerated (Newman, Wagner, Cameto, & Knokey, 2009). These realities have not improved substantially over the past twenty years, and the improvement that has been made has been at rates well below those of other students with disabilities (Wagner, Newman, Cameto, & Levine, 2005). In addition, outcomes for youth with disabilities are worse for low-income and minority students. For example, three times more White students with disabilities attend four-year colleges and universities than African-American students with disabilities (Newman et al., 2009).

Negative postschool outcomes, such as dropping out of high school or involvement with the criminal justice system, have considerable societal costs. According to Amos (2008):

The average annual income for a high school dropout in 2005 was \$17,299, compared to \$26,933 for a high school graduate, a difference of almost \$10,000. If that high school graduate goes on to earn a bachelor's degree, he or she will earn an average of \$52,671 annually. Over the course of a lifetime, a college graduate will earn, on average, \$1 million more than a high school dropout ... Over the course of his or her lifetime, a single high school dropout costs the nation approximately \$260,000 in lost earnings, taxes, and

productivity....Had the students who dropped out of the Class of 2008 stayed in school and graduated, the nation's economy would have benefited from an additional \$319 billion in income over their lifetimes. (p. 11)

Further costs associated with negative postschool outcomes derive from the high incarceration rate for this population. Recent estimates suggest that about two-thirds of the juvenile inmates in the U.S. have at least one mental illness (Moore, 2009). A single, striking comparison highlights the severity of outcomes for students with EBD: In their first years after high school, young adults with EBD are nearly three times more likely to have been arrested than to have enrolled in college (Newman et al., 2009).

### ***Purpose of the Study***

The present research attempted to better understand those poor outcomes and, more importantly, examine malleable factors (i.e., family and student engagement) associated with improved outcomes, particularly for students with EBD who are members of ethnic/racial minority groups or whose families have low incomes. Thus, this study examined the relationship between predictor variables and criterion variables among students with EBD. The four groups of predictor variables were: demographic (i.e., race/ethnicity, family income, and gender), negative student engagement, family engagement, and positive student engagement. Two types of family engagement were included in the full analysis: family engagement at school (i.e., participation in school and class events, communication between school and family) and family engagement at home (i.e., assistance with homework, school-family communication). Two forms of student engagement were examined: negative engagement (e.g., being teased, bullied, or suspended) and positive student engagement (e.g., enjoyment of school, involvement in school

activities outside of class). The four criterion variables were: high school graduation, postsecondary education enrollment, fulltime employment, and arrest.

The study hypothesis is that, among youth and young adults with EBD diagnoses who have exited high school, demographic factors (i.e., race/ethnicity, family income, and gender), as well as family and student engagement variables from their school experience, are statistically significant and meaningful predictors of four post-high school outcomes: high school graduation, postsecondary education enrollment, fulltime employment, and arrest. The study is based on a conceptual framework that describes the following relationships: students with EBD who have low levels of negative student engagement (e.g., being bullied, being suspended), high levels of parent engagement at home and at school, and high levels of positive student engagement (e.g., feeling connected to school, being involved in extracurricular activities) will be (a) more likely to graduate from high school, (b) more likely to enroll in postsecondary education, (c) more likely to be employed fulltime, and (d) less likely to be involved in the criminal justice system. Moreover, the study is informed by an intersectional (Collins, 2000) perspective in examining whether family engagement and positive student engagement constitute protective factors for students with EBD who are from racial/ethnic minority groups and/or from families with low incomes.

### ***Definitions of Variables***

Three categories of predictor variables were included in the study: demographic variables included race/ethnicity, family income, and gender; student engagement variables included positive and negative student engagement; and family engagement variables included school- and home-based family engagement. Whereas demographic (or status) predictors are generally considered to be not amenable to school-based interventions, other predictors—such as family

and student engagement—are malleable, alterable, or amenable to intervention (Reschly & Christenson, 2006).

Three malleable forms of engagement were examined in the study: family engagement, negative student engagement, and positive student engagement. Family engagement (or family involvement), which is specified in the Individuals with Disabilities Education Act (IDEA; 2004) and widely promoted as best practice, is a key factor for predicting better outcomes for students with emotional or behavioral disabilities (Kohler & Field, 2003; Lindstrom, Doren, Metheny, Johnson, & Zane, 2007; Newman, 2005). Two forms of family involvement were included in the final regression models: family support at school and family support at home. Family members interact with school systems through participating in general meetings and parent/teacher conferences, volunteering at the school, and attending school and class events; and they support their children at home by talking about school and helping with homework.

Negative student engagement refers to actions or behaviors associated with student misbehavior and lack of connectedness to school (Jenkins, 1995), including being teased or bullied, being a bully, and being suspended. Positive student engagement refers to actions or attitudes contributing to connectedness to school (Finn, 1989), such as enjoyment of school, positive relationships with peers and teachers, involvement in extracurricular activities, or good grades.

Four criterion variables were selected in order to provide information on the relationship between the predictor variables and a range of important postschool outcomes. These outcome areas address whether participants (a) graduated from high school, (b) were employed fulltime, (c) had attended postsecondary institutions (i.e., 2-year or 4 year colleges, vocational programs) since high school, and (d) had ever been arrested.

The selection of variables was driven by prior literature examining the relationship between family and student engagement and student outcomes among students with and without disabilities, and especially among students with EBD (e.g., Finn, 1989; Lindstrom et al., 2007; Reschly & Christenson, 2006; Sinclair, Christenson, & Thurlow, 2005). Whereas most prior studies looked at all students with disabilities collectively, the present study extends that literature by examining the relationships between predictor variables (i.e., demographic, student engagement, family engagement) and postschool outcomes specifically for the EBD student population.

### ***Methodological Approach***

This study is based on data in the National Longitudinal Transition Study—2 (NLTS2; SRI International, 2000). Variable selection for the logistic models was informed by cross tabulations and correlations. Once appropriate variables were identified, stepwise logistic regression was used to measure the significance of the predictive relationship between four categories of predictor variables (i.e., demographic, negative student engagement, family engagement, and positive student engagement) and four criterion variables: high school graduation, postsecondary enrollment, fulltime employment, and arrest.

### ***Significance of the Study***

There is a pressing need to better understand the factors that contribute to the amelioration of poor postschool outcomes for students with EBD: poor high school graduation rates, low postschool employment and postsecondary education enrollment rates, and high rates of involvement with the criminal justice system. Toward this end, this study examined the relationship between these students' post-high school outcomes and demographic variables and malleable factors (e.g., family and student engagement) in order to assess the benefits of

programming related to family and student engagement on students' outcomes, particularly for students who are African-American or Hispanic and/or from families with low incomes. It extends prior research in three ways. First, it clarified the relationship between family and student engagement factors when students are in school and post-high school outcomes for students with EBD. Second, it provided quantitative support for the role of family engagement for students with disabilities transitioning from high school. Third, results inform future work examining the intersections of race/ethnicity, family income, gender, and disability.

## Chapter 2: Literature Review

In the following chapter, several factors with a bearing on the post-high school outcomes among emotional or behavioral disabilities (EBD) will be discussed. First, a review of some background factors regarding diagnostic criteria, high school experiences and challenges, restrictive educational placements, and the stigma of mental illness provides a context for the present study. Literature pertaining to key predictor variables in this analysis, including race/ethnicity, family income, gender, family involvement, and student engagement, will be reviewed next. Finally, prior research examining the postschool outcomes of students with EBD will be presented. The four outcomes serving as the criterion variables for this study—high school graduation, employment, postsecondary education, and involvement with the criminal justice system—will be emphasized.

### ***Background on Students with EBD***

To meet the federal criteria for an emotional or behavioral disability (i.e., *emotional disturbance*) in IDEA (2004), a student's educational performance must be negatively affected "over a long period of time and to a marked degree" by one or more of the following conditions:

- (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
- (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
- (C) Inappropriate types of behavior or feelings under normal circumstances.
- (D) A general pervasive mood of unhappiness or depression.
- (E) A tendency to develop physical symptoms or fears associated with personal or school problems. (§300.8 [c][4][i])



The EBD designation includes schizophrenia but “does not apply to children who are socially maladjusted” (§300.8 [c][4][ii]), unless they meet the criteria above. According to recent data, less than one percent (0.7%) of the total student population aged 6-21 has been identified with EBD and is receiving special education services; this percentage has remained unchanged over the past ten years (U.S Department of Education, 2009). The IDEA criteria, and particularly the exclusion of students with social maladjustment, have been criticized for resulting in vague diagnostic decisions, which vary considerably from state to state, and for excluding many students from necessary services (Gresham, 2005; Merrell & Walker, 2004). In contrast to the 1% of students identified with EBD, estimates of childhood mental health disorders suggest that as many as 20% of school-age children and adolescents could be diagnosed with mental disorders affecting their daily functioning (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; U.S. Department of Health and Human Services, 1999). The much smaller rate of EBD diagnosis suggests that students with only the most severe behavioral, social, and mental health disorders, whose disability affects their educational performance, receive the EBD diagnosis (Landrum Tankersley, & Kauffman, 2003).

The EBD category includes students with a range of conditions, including anxiety disorders, mood disorders, oppositional defiant disorder, conduct disorder, and schizophrenia. This student population tends to have lower social skills ratings (e.g., self-control, cooperation, maintaining friendships) and higher cognitive skills than other students with disabilities (Wagner, Kutash, Duchnowski, & Epstein, 2005). Students with EBD often have co-occurring disabilities, including 63% with attention hyperactivity deficit disorders (ADHD) and 30% with learning disabilities (LD; Wagner & Davis, 2006). Thus, the EBD category is populated by a

heterogeneous group of students. Although student characteristics differ, a host of challenges related to social, behavioral, and academic expectations are common among students with EBD.

***Social, behavioral, and academic challenges.*** Social skills deficits and inappropriate behavior are part of the diagnostic criteria for EBD, and these deficits contribute to difficulties with peer and teacher relationships, as well as disengagement from school (Cullinan & Sabornie, 2004). National data show that, while in high school, they have higher rates of absenteeism and are less likely to be involved in organized school groups than other disability categories (Wagner, Newman, Cameto, & Levine, 2005). Less than a third of students with EBD reported participating in organized extracurricular activities, 15% said they never “feel part of school,” and 17% said they never enjoy school (Wagner, Newman, Cameto, Levine, & Marder, 2007, p. 47). These rates of social disconnection were the highest among all disability groups (Wagner et al., 2007). Additionally, the suspension/expulsion rate (73%) for students with EBD is far higher than that of students with other disabilities (28%) and the general population (22%; Wagner, Kutash et al., 2005). Social challenges and disengagement from school contribute to the academic challenges of students with EBD (Lane, Barton-Arwood, Nelson, & Wehby, 2008).

Academic deficits are typical of students with EBD. Results of a meta-analysis of academic functioning in reading, math, spelling, and written expression among students with EBD in all grade levels indicate significant deficits in all areas compared to students without disabilities (Reid, Gonzalez, Nordness, Trouth, & Epstein, 2004). Among elementary and middle students with EBD, 61% score in the bottom quartile in reading assessments and 43% score in the bottom quartile on math assessments, rates comparable to other students with disabilities but far below peers without disabilities (Wagner, Kutash et al., 2005). Nelson, Benner, Lane, and Smith (2004) found that academic deficits in reading, math, and written skills for students with

EBD were consistent across all grade levels: 83% scored below the mean on a measure combining reading, math, and written subscales. Research on high school students with EBD has found that their math and reading scores are comparable to students with LD: The scores of both groups were well below average on a standardized measurement (Lane, Carter, Pierson, & Glaesser, 2006). Academic accommodations for students with EBD typically include more time on tests and assignments and more frequent teacher feedback on their work. Less common accommodations include slower-paced instruction and tutoring from peers or adults (Wagner & Davis, 2006).

Substance use and abuse is also a concern for students with EBD. Research has found that substance abuse and psychiatric disorders are often co-occurring among adolescents (Rounds-Bryant, Kristiansen, & Hubbard, 1999; Rowe, Liddle, Greenbaum, & Henderson, 2004). Blum, Kelly, and Ireland (2001) found that 7<sup>th</sup>-12<sup>th</sup> grade students with emotional disabilities (i.e., students scoring in the highest quintile on an “emotional distress scale” [p. 482]) had higher rates of cigarette, alcohol, and marijuana use than peers without disabilities. In addition, compared to peers without disabilities, students with emotional disabilities had far higher rates of suicide attempts (12% reported an attempt in the last year vs. 2% of peers) and sexual abuse (5% vs. 3%; Blum et al., 2001). The same study examined students’ exposure to risk-enhancing and risk-diminishing (i.e., protective) factors associated with substance use, suicide attempts, and sexual abuse. Students with emotional disabilities were more likely to report risk-enhancing factors such as experiencing violence, victimization, or emotional distress; being on welfare; repeating a grade; having a family member who committed suicide; or having a gun in the home. However, they had less access to protective factors such as family connectedness, parent expectations for school completion, frequent activities with parents, high

GPA, or high self-esteem (Blum et al., 2001). Although community-based substance abuse treatment centers have been found to have some initial success in treating adolescents with psychiatric disorders, the rate of relapse within one year is high (Rounds-Bryant et al., 1999), particularly for individuals with multiple psychiatric diagnoses (Rowe et al., 2004).

Much of the intervention literature for students with EBD has concentrated on remediating social deficits in three areas: social interaction, prosocial behavior, and social cognitive skills (Gresham, Cook, Crews, & Kern, 2004). Interventions in each of these areas have empirical support for their use in classrooms (Gresham et al., 2004), particularly at the preschool and adolescent levels (Cook et al., 2008). Cook and colleagues noted that the majority of social skills intervention research has focused on efficacy (i.e. the relationship between treatment and effect variables) rather than efficiency (i.e., the generalizability and practicality of the intervention). Despite the evidence for efficacy, not all students with EBD receive social skills training and behavior supports. Nationally, Wagner and Davis (2006) found that less than half of high school students with EBD have social skills classes, even though teachers reported that most would benefit from them. Similarly, only 48% had behavior management or support plans, 45% received behavioral intervention services, and 40% received mental health services (Wagner et al., 2006).

Behavioral and academic deficits, high rates of substance abuse, and limited treatment and instructional programs all contribute to the gradual process among many students with EBD that starts with disengagement from school and leads to dropping out (Finn, 1989). The next section examines an additional factor related to disengagement: educational placements outside of the general education classroom.

***Restrictive educational placements.*** Although federal legislation such as IDEA (2004) and No Child Left Behind (NCLB; 2001) have encouraged school personnel to include students with EBD in general education, these students continued to be educated in more restrictive settings than students from most other disability categories (U.S. Department of Education, 2009). Only 32% of students with EBD were served in the general education classroom (i.e., less than 21% of the school day in a special education classroom), whereas 52% of all other students with disabilities were in such placements. The percentage of students with EBD (28%) in self-contained classrooms (i.e., 60% or more of the school day) was far higher than that for all students with disabilities (18%, U.S. Department of Education, 2009). In addition, 17% of students with EBD were placed in separate environments (e.g., residential facilities, separate schools, homebound and hospital environments) compared to 4% of all other students with disabilities (U.S. Department of Education, 2009).

Students with EBD attend their neighborhood schools less often and are more likely to change schools than other students with disabilities. Only 69% of students with EBD attend schools in their neighborhoods compared to 82% of all other students with disabilities (Wagner et al., 2006). Almost two-thirds of students with EBD reported attending four or more schools, and 20% reported that the school had reassigned them at least once, a figure more than six times the average rate for other students with disabilities. Students with EBD are held back in a grade at rates similar to other students with disabilities, which are twice the rate of students without disabilities (Wagner, Kutash et al., 2005). Although some have argued that separate placements more adequately meet the needs of students with EBD (Kauffman, Bantz, & McCullough, 2002; Landrum et al., 2003), others have documented the benefits for students with and without

disabilities of inclusive placements for students with EBD (Braaten & Quinn, 2000; Heath et al., 2004; MacLeod, 2001; Skinner, Neddenriep, Robinson, Ervin, & Jones, 2002).

Restrictive placements, frequent changes in school settings, and grade retention are likely to exacerbate challenges that students with EBD already have in feeling connected to peers, teachers, and their schools generally. By being placed outside of the general education classroom, students with EBD are deprived of the opportunity to learn from students with more prosocial behaviors. Frequent school changes, often to facilities outside of their communities, upset whatever relationships students may have built with teachers, peers, and community members. As the next section shows, these challenges take place in school and larger societal contexts characterized by the stigma of mental health disabilities.

***The stigma of mental health disorders.*** In addition to the other challenges of high school, students with EBD reckon with the stigma associated with mental health disorders. This stigma contributes to the negative reactions from family members, peers, teachers, and mental health caregivers that students might encounter (Wahl, 1999). Stigma about mental illness, like any kind of stigma, equates perceived differences in appearance or behavior with negative stereotypes (Goffman, 1963). According to a U.S Surgeon General's report on mental health, the stigma associated with mental disorders can be traced to the "separation of the mental health treatment system in the United States from the mainstream of health" (U.S. Department of Health and Human Services, 1999, p. 6). The view that mental health is something unconnected to physical health has contributed to persistently negative public perceptions of individuals with mental health disorders.

Some evidence has suggested that public attitudes about people with mental health disorders are worsening. For example, more people in 1996 viewed people with mental illness as

violent or frightening than in 1950 (Phelan, Link, Stueve, & Pescosolido, 2000). In addition, this stigma has both public and private aspects and consequences (Corrigan, 2004). Public stigma is prejudice against individuals presumed or known to have mental disorders, and it manifests itself in employment, health care, and criminal justice decisions, all to the detriment of individuals with such perceived disorders. Private stigma is connected to individuals' understanding of their mental health problems, equating mental disorder with incompetence. The result is that an individual will be less likely to seek out treatment (Corrigan, 2004). Corrigan suggested that advocacy and education efforts, as well as encouraging more contact and interaction between people with and without mental disorders, have the potential to improve public perceptions of mental illness. However, given the more restrictive educational placements of students with EBD, it is unlikely that more interaction is occurring.

An important way that stigma affects students with EBD is through teacher and peer perceptions of, and stereotypes about, oppositional behavior. Such behavior can result in students being labeled as "troublemakers" from an early age; and once such a label is applied, it can be very difficult for students to be perceived as anything but disruptive (Ferguson, 2000). The behaviors associated with negative labels like "troublemaker" may have positive consequences with peers and negative consequences with school personnel. For example, in a study on violence and peer acceptance, Kreager (2007) found a positive association between violent behavior and friendship among male students who struggled in school, a designation that fits many students with EBD. In another study, Staff and Kreager (2008) found that males with high status in violent peer groups were also more likely to drop out of high school than their peers with low status in violent peer groups.

Other research has looked at how troublemaker designations interact with alternative identity designations from school staff. Becker (2010) examined the school discourse around students with behavior challenges and identified two main identity categories: “being youth *with problems* (who deserve teacher sympathy and assistance) and youth who *were problems* (who deserve respect from their peers)” (p. 71, italics in original). Youth with problems got along with teachers but not their peers, and youth who were problems got along with peers but fared poorly in school tasks. Students who successfully navigated between these two identity categories were more successful in school without compromising their status in the eyes of peers. Thus, students with EBD must negotiate their identities as individuals with problems and individuals who are problems, all the while navigating teacher and peer perceptions of them that are likely colored by the societal stigma associated with mental illness.

Behavioral, social, and academic deficits; restrictive educational placements and poor transition planning; substance abuse and disengagement from school: all these contribute to the difficult transition into the adult world that students with EBD undertake. Not surprisingly, data show that these students have among the worst graduation rates and post-high school outcomes of all students with disabilities. Before examining those outcomes in greater detail, prior research with a bearing on the three sets of predictor variables of interest for the present study (i.e., race/ethnicity and family income, family involvement, and transition services) will be examined.

### ***Intersectionality, Family Engagement, and Student Engagement***

Three categories of predictor variables were analyzed in the present study: demographic, family engagement, and student engagement. Given the disproportionately high rates of EBD diagnosis among African-Americans and the high poverty rates among this student population, student race/ethnicity and family income are important considerations for research involving



students with EBD. The present study adopts an intersectional approach to assess the relationship between race/ethnicity and family income and key transition outcomes. The theoretical and empirical groundwork for this type of research is presented next. After that, the research base for family and student engagement is reviewed.

***Intersections of race/ethnicity, family income, gender, and EBD.*** This study adopts an intersectional approach (Collins, 2000; Crenshaw, 1991) and attends to differences by race/ethnicity, family income, and gender in the relationship between high school predictors (i.e., family and student engagement) and post-high school outcomes for students with EBD. Twenty-five years ago, Grant and Sleeter (1986) noted that education research examining key demographic features, such as social class, race, and gender, in isolation leads to “an oversimplification or inaccurate understanding of what occurs in schools, and therefore to inappropriate or simplistic prescriptions for educational equity” (p. 197) and called for more integrated approaches. More recently, researchers have called attention to the importance of disability as an additional priority in intersectional approaches (Blanchett, Klingner, & Harry, 2009; Connor, 2006; McCall & Skrtic, 2009).

Intersectional approaches are particularly important for research related to students with EBD, given that African-American males have long been over-represented in this category. Disproportionate identification of minority students into special education has been an ongoing concern in the field for decades (Dunn, 1968; Mercer, 1973), and more recent research continues to interrogate racial/ethnic disparities in special education placements (Harry & Klinger, 2006; Skiba et al., 2008). The overall population of high school students with EBD is disproportionately African-American: 25% of students with EBD are African-American compared to 16% in the general population (Wagner, Kutash et al., 2005). A common index of

disproportionality, risk ratios (Hosp & Reschly, 2003), compares the likelihood of identification for a given racial/ethnic group with all students in special education. African-American students are 2.24 times more likely to be identified with EBD (U.S. Department of Education, 2009). In addition, the EBD category is disproportionately male: Males are almost three and a half times more likely to be identified, and the odds ratio varies little for White (OR = 3.46), African-American (OR = 3.42), and Hispanic (OR = 3.65) students (Coutinho & Oswald, 2005).

Other research has identified racial/ethnic and social class disparities in the incidence of mental health disorders. For example, Samaan (2000) found that poverty is associated with a higher probability of depression, anxiety, and anti-social conditions. However, despite higher poverty rates among racial/ethnic minorities, they have lower rates of identification for mental health disorders (Samaan, 2000). In another study, Coker and colleagues (2009) found a relationship between perceptions of racial/ethnic discrimination and higher rates of mental health disorders (e.g., depression, opposition defiant disorder) within a large sample of 5<sup>th</sup> graders.

Students with EBD are more likely to be raised in poverty, as well, and recent U.S. Census figures show that the poverty rates are higher among the African-American (25.8%) and Hispanic (25.3) population compared to the non-Hispanic White (9.4%) population (DeNavas-Walt, Proctor, & Smith, 2010). The percentage of students with EBD whose families have poverty-level incomes (30%) is greater than that for families of students with other disabilities (24%) and families of students in the general population (16%; Wagner, Kutash et al., 2005). Parent employment status is a related concern, and students with EBD are more likely to live with an unemployed head of household or with another family member with a disability than other students with or without disabilities (16%; Wagner, Kutash et al., 2005).

High poverty rates and disproportionate identification for special education and mental health disorders are pressing concerns; however, less attention has been given to the problem of disparate outcomes by race/ethnicity, family income, and gender among students with disabilities. For instance, employment rates for students with disabilities out of high school one to four years are far lower for African American (35.3%) than for White (63.6%) students, and this gap has widened since the late 1980s (Newman et al., 2010). Rates of enrollment in any kind of postsecondary institution (i.e., vocational training, 2- or 4-year college) vary less by race/ethnicity with Hispanic students with disabilities (40.3%) attending postsecondary institutions at slightly lower rates than White (46.8%) or African-American(45.4%) students with disabilities (Newman et al., 2010). Although racial/ethnic differences in enrollment at any type of postsecondary institution are relatively small, the difference between African-American students and both White and Hispanic students in enrollment at 4-year colleges is considerable: Rates for African-American students (5.3%) are far lower than for White (16.2%) and Hispanic (15.4%) students with disabilities, and this gap has widened considerably in the past 20 years (Newman, Wagner, Cameto, Knokey, & Shaver, 2010).

Similarly, outcomes differ for students with disabilities based on their family incomes and gender. The rate for young adults with disabilities being employed since high school is far lower for students with low annual family incomes (48.8%) than for students from middle (71.2%) or high (80.5%) family incomes (Newman et al., 2009). Postsecondary enrollment rates also increase as family income rises: Just 29.9% of students from families with incomes of \$25,000 or less enroll in postsecondary institutions, compared to 46.0% of students from families in the \$25,001 to \$50,000 range and 56.7% of students from families with incomes above \$50,000 (Newman et al., 2009). Important gender differences are also evident in postschool

outcomes for youth with disabilities. For instance, the rate of fulltime employment is far higher for males (68%) than for females (35%), and males students are about twice as likely to report that they had been arrested (Newman et al., 2009). Female youth with disabilities attended postsecondary institutions at higher rates than males; however, males had higher enrollment rates than females at four-year institutions (Newman et al., 2009).

These disparate outcomes by race/ethnicity, family income, and gender are for all students with disabilities; the present study examined these outcomes for students with EBD. Closer examination of disparate outcomes disaggregated by race/ethnicity, family income, and gender for particular disability groups (e.g., students with EBD) of the sort conducted in this study can inform the discussion about the consequences of, and remedies for, disproportionate identification. In addition, the current study extends the intersectional literature by examining how the relationship between school experiences of students with EBD (i.e., family and student engagement) and key postschool outcomes differs for students based on race/ethnicity, family income, and gender.

***Family engagement.*** Family engagement (or family involvement) is a key component of federal legislation for students with disabilities (IDEA, 2004) and a cornerstone of effective transition programming (Kohler & Field, 2003; Morningstar, 2006). Family members of students with emotional or behavioral disabilities engage with schools in different ways than parents of other students. For example, compared to parents of students in the general population, parents of students with EBD are more likely to help with homework but at a lower rate than parents of students with other disabilities (Newman, 2005). In addition, parents of students with EBD are far less likely than parents in the general population or parents of students with other disabilities to attend a school or class event or to volunteer at the school (Newman, 2005; Wagner, Kutash et

al., 2005). Other research suggests that attitudes about their children's schools and special education services may be different for parents of students with EBD than parents of students with other disabilities. For example, they report greater dissatisfaction with their students' schools (29%) than parents of students with other disabilities (19%) and parents of students without disabilities (13%; Wagner, Kutash et al., 2005). The same authors found that parents of students with EBD report greater dissatisfaction with their students' special education services (20%) than parents of students with other disabilities (12%). Finally, parents of students with EBD feel they have to work harder to get services and have reported participating in mediation and due process hearings at rates higher than parents of students with other disabilities (Wagner, Kutash et al., 2005).

Lack of collaboration between school and families is particularly troubling, given the legislative mandates enacted to support it. Beginning with the original federal special education legislation (the Education for All Handicapped Children Act [1975]), IDEA has required that families be a part of the decision-making and problem-solving process in their students' education (Ong-Dean, 2009; Turnbull, Stowe, & Huerta, 2007). Moreover, a considerable body of research provides support for family involvement as a best practice in transition (e.g., Devlieger & Trach, 1999; Lindstrom et al., 2007). Family involvement is one of the resources contributing to students' successful transition to adult roles and has been identified as such since the inception of transition as a field (Will, 1983). Programs encouraging high levels of family involvement in educational decision-making are more likely to increase academic growth, confidence, and self-advocacy skills among the students they serve (Karvonen, Test, Wood, Browder, & Algozzine, 2004; Kohler & Field, 2003; Morningstar, Turnbull, & Turnbull, 1995). Furthermore, students whose parents successfully advocate for services with school personnel

are likely to have better outcomes in terms of postschool employment (Fourqurean, Meisgeier, Swank, & Williams, 1991; Lindstrom et al., 2007) and independent living (Devlieger & Trach, 1999).

Other studies have looked carefully at obstacles to family involvement. For example, parents have identified educational professionals' reliance on overly formal procedural requirements (i.e., IEP meetings focused more on filling in forms than addressing student needs), distrust of educators, and outright discrimination as barriers to partnerships between school and family, especially for culturally and linguistically diverse (CLD) families (deFur, Todd-Allen, & Getzel, 2001; Geenen, Powers, Lopez Vasquez, & Bersani, 2003; Harry, Allen, & McLaughlin, 1995; Kim & Morningstar, 2005; Rueda, Monzo, Shapiro, Gomez, & Blacher, 2005). Related research conducted with students without disabilities suggests that parenting styles may differ depending on family income. For example, Lareau (2003) found that poor and working class parents tend to trust teachers and other educational experts more than middle class parents; however, teachers often interpret that trust as disengagement from educational processes. Other research suggests that low levels of family involvement and negative family attitudes about schooling may have significant consequences for students, particularly for students with EBD. For instance, Blum and colleagues (2001) found that students with mental health disorders had less access to family-level protective factors (i.e., family connectedness, parent expectations for school completion, frequent activities with parents) that are associated with lower rates of substance abuse among this population.

The present study seeks to extend the literature on family involvement for transition-age youth in two ways: (a) by determining the relative importance of two different forms of family engagement (i.e., school- and home-based family engagement) and (b) by providing quantitative

evidence for the predictive value of family involvement on postschool outcomes. Prior research on family involvement for students with disabilities has concentrated on family involvement at school (i.e., family or parent interactions with school staff and settings). Newman (2005), in reporting on family involvement data from Wave 1 of the NLTS2, identified an additional category: family involvement at home, which includes helping with homework and conversations about school. The current study examined the effects of these forms of family involvement on postschool outcomes. Most of the prior research on family involvement and its relation to postschool outcomes has used qualitative methods (e.g., deFur et al., 2001; Devlieger & Trach, 1999; Lindstrom et al., 2007; Morningstar, Turnbull, & Turnbull, 1995). The proposed study is expected to contribute to the limited quantitative research base on family involvement and its impact on postschool outcomes among students with disabilities (e.g., Boone, 1992; Fourqurean et al., 1991). Another area with potential for improving the post-high school outcomes for students with disabilities is student engagement.

***Student engagement.*** Positive student engagement consists of “behavioral and psychological connections with school” (Appleton, Christenson, & Furlong, 2008, p. 369), and it highlights the ways that student attitudes toward school contributes to school success. Student engagement has been conceptualized as a malleable, multidimensional construct related to student motivation that predicts high school dropout or completion among the general student population (Finn, 1989; Fredricks, Blumenfeld, & Paris, 2004; Reschly & Christenson, 2006). Thus, students with greater levels of engagement are more likely to persist in school and graduate. According to Fredricks and colleagues (2004), “Routes to student engagement may be social or academic and may stem from opportunities in the school or classroom for participation, interpersonal relationships, and intellectual endeavors” (p. 61). Finn (1989) recognized that

engagement is a process; withdrawal from school is only the last in an often-years-long process of disconnection from school.

Although engagement draws on or subsumes concepts with long research histories, such as motivation and alienation, research explicitly focused on engagement is newer (Appleton et al., 2008). Its roots can be traced to Mosher and MacGowan's (1985) review of related constructs, which found no prior research that had "directly conceptualized or measured student engagement in secondary schools" (p. 3). Since then, varied conceptualizations of engagement have been offered. Recent researchers have proposed two- (Finn, 1989; Willms, 2003), three- (Fredricks et al., 2004), and four-part (Appleton et al., 2008; Appleton, Christenson, Kim, & Reschley, 2006) definitions of engagement.

Two-part engagement constructs generally include an emotional or psychological element (e.g., feelings of connectedness or identification with school) and a behavioral element (i.e., participation; Finn, 1989; Willms, 2003). Relationships with teachers and peers and feelings of belonging are aspects of emotional engagement. Behavioral engagement addresses areas such as homework completion, attendance, classroom participation, and involvement in academic and extracurricular activities. Fredricks and colleagues (2004) added a third element, cognitive engagement, which includes self-regulation, personal goal-setting, autonomy, and self-determination. Appleton and colleagues (2006, 2008) added a fourth element, academic engagement, which is comprised of time on task, homework completion, and accumulation of academic credits.

A growing body of research supports the relationship between student engagement and a host of key student behaviors and outcomes, including high school graduation, student misbehavior, and juvenile delinquency. Reschly & Christenson (2006) found that student



engagement was a significant predictor of high school graduation among students with EBD and learning disabilities (LD), after controlling for socio-economic status, grade retention, and test scores. The authors concluded that “student engagement is most important for students who are placed at the highest risk for post school outcomes” (p. 289). Similarly, Zablocki (2009) found that low levels of emotional engagement significantly predicted high school dropout among students with a wide range of disabilities. Other research has found that higher levels of attachment and commitment to school are associated with lower levels of student misbehavior and that these relationships differ depending on race/ethnicity (Peguero, Popp, Latimore, Shekarkhar, & Koo, 2010). In addition, lack of commitment or bonding to school has been found to predict delinquency (Jenkins, 1995; Stewart, 2003), and student commitment to school is, in some part, a result of school organizational factors (i.e., a more coherent and positive community; Payne, Gottfredson, & Gottfredson, 2008).

Interventions focused on engagement have been shown to improve graduation rates among students with disabilities (Sinclair, Christenson, Evelo, & Hurley, 1998; Sinclair, Christenson, & Thurlow, 2005). For instance, the *Check and Connect* dropout prevention intervention illustrates how engagement-focused programming might be structured, as well as how it impacts students at risk for dropping out, particularly those with EBD. *Check and Connect* consists of systematic and ongoing monitoring of students by a single staff member with frequent parent contact to ensure that student problems (e.g., absenteeism, academic failure, behavioral challenges) are immediately addressed (Sinclair et al., 2005). The *Check and Connect* monitor plays a key role in supervising student progress, intervening when conflicts arise, and guiding students through processes to address problems. The program also emphasizes communication between staff and family members in order to support problem-solving processes

when issues occur at home, as well as to encourage family support of academic and behavioral goals (Sinclair et al., 2005). *Check and Connect* has been shown to have positive effects on students with EBD in terms of staying and progressing in school (Sinclair et al., 1998; Sinclair et al., 2005).

The current study draws from the student engagement literature in two ways. First, it is based on Finn's (1989) foundational explanation of the process of withdrawing from high school, the participation-identification model. Thus, participation (i.e., active involvement in class and school) and identification (psychological connectedness to school) are viewed as important predictors of high school graduation and other postschool outcomes, such as employment and postsecondary education. Second, the relationship between low levels of connectedness and student misbehavior (Jenkins, 1995) is key to understanding the high rate of misbehavior among students with EBD and its negative impact on postschool outcomes. Thus, negative student engagement, or engagement in activities that decrease connectedness, is recognized as a separate construct addressing items such as bullying and being suspended (see "Conceptual Framework" below).

### ***Postschool Outcomes among Young Adults with EBD***

The post-high school outcomes for students with emotional or behavioral disability diagnoses are poor and have remained so during the past 20 years; compared both to other students with disabilities and to their peers without disabilities, students with EBD have lower rates of high school graduation, employment, postsecondary education, and involvement with the criminal justice system (Wagner et al., 2005).

***High school graduation.*** Graduation and dropout rates for students with EBD are among the worst for any category of disability: Just 38% of students with EBD graduated with a regular

diploma in 2003-2004 as compared to 55% of all students with disabilities. The dropout rate among students with EBD is estimated to be 52% compared to 31% for all students with disabilities (U.S. Department of Education, 2009). Other national data sources allow comparisons with students without disabilities: Just 56% of students with EBD completed high school (with any kind of diploma) compared to 70% of the general student population (Wagner et al., 2005). Of those youth with EBD who graduated, 86% received regular diplomas, which was lower than all but one other disability category (i.e., intellectual disabilities, 84%; Wagner, Newman, Cameto, Garza, & Levine, 2005).

School-sponsored work experiences and transition goals based on student interests have been shown to increase graduation rates (Benz, Lindstrom, & Yovanoff, 2000), but, as noted earlier, students with EBD have fewer school-sponsored work experiences and less involvement in transition planning involvement than other students with disabilities (Wagner & Davis, 2006). High mobility rates among students with EBD have also been identified as contributing factors to high dropout rates (Osher, Morrison, & Bailey, 2003). In a study with students with a range of disabilities, Benz and colleagues (2000) identified a number of risk factors associated with dropping out, including a history of school absenteeism or suspension, history of dropout (i.e., dropped out before and returned to school), unstable living situation, and history of substance abuse. As the previous sections have detailed, students with EBD have high rates of exposure to such risk factors.

***Employment.*** Data from the NLTS2 suggest that young adults with EBD have generally poor post-high school employment outcomes. Newman and colleagues (2009) found that the percentage of young adults with EBD employed at the time of the interview (42%) was lower than that for all young adults with disabilities (57%) and for young adults in the general

population (66%). This might be explained by the frequency that young adults with EBD change jobs. Since high school, they reported having more jobs (3.4) than any other disability category, and their average stay at each job was shorter (7.6 months) than young adults with other disabilities (10.0 months) and young adults in the general population (14.7 months; Newman et al., 2009). The same report showed that, after being out of school for four years, 56.3% of young adults with EBD were working fulltime (35 or more hours per week), and they were most likely to hold positions as food service employees, cashiers, and skilled laborers (Newman et al., 2009). Other research has found that the gap in employment rates between students with EBD and peers without disabilities widens over time. Employment rates were comparable during the first five years after high school but lower for students with EBD six to ten years out of high school (Malmgren, Edger, & Neel, 1998).

One of the few areas that young adults with EBD exceed their peers with other disabilities is in salary. Young adults with EBD out of school from one to four years reported earning an average salary of \$10.00 per hour, which was highest among all disability groups and higher than the average salary for all young adults with disabilities (\$8.20) and for young adults in the general population (\$9.20; Newman et al., 2009). This finding can be explained to some extent by the fact that many young adults with EBD have been in the labor market longer, as their high dropout rates suggest. They are also far more likely to be working than attending postsecondary education institutions.

***Postsecondary education.*** Postsecondary education enrollment rates are distressingly low for young adults with EBD. According to national data, only 21% of young adults with EBD out of high school for two years or less have enrolled in any form of postsecondary education (i.e., community college, university, vocational or technical school) at some time since leaving high

school (Wagner, Newman, Cameto, & Levine, 2005). These enrollment rates are much lower than comparable rates for all students with disabilities (31%). Estimates of students in the general population currently enrolled in postsecondary education (41%) are higher still. Of students with EBD enrolled in postsecondary education, 13% having enrolled in community colleges, 4% in 4-year colleges or universities, and 7% in vocational, business, or technical schools. The discrepancy with the general population is most striking when comparing enrollment rates at 4-year colleges, which 28.3% of students in the general population currently attend (Wagner, Newman, Cameto, Garza, & Levine, 2005).

Data on students with EBD out of school for four years are somewhat more encouraging. Within four years of leaving high school, 34% of students with EBD report having enrolled in any kind of postsecondary education with 21% having enrolled in community college, 6% in 4-year colleges, and 23% in vocational, business, or technical schools (Newman et al., 2009). The overall enrollment rate is still much lower than for all other students with disabilities (45%) and students in the general population (53%). The 6% four-year college enrollment rate is dwarfed by the rate for the general population (49%). Other research has suggested that the gap in postsecondary enrollment, like that for employment, may increase over time. Malmgren and colleagues (1998) found that five years after high school, postsecondary education completion rates (i.e., obtaining a degree or certificate) were roughly half for students with EBD (23%) compared to same-age peers without disabilities (45%); after five more years, the gap widened: 29% for the EBD sample and 67% for their peers.

In addition, young adults with EBD have a longer gap between exiting high school and entering college than their peers with disabilities. When they do enroll, they are less likely to disclose their disability. Young adults with EBD wait about six and a half months before

enrolling compared to about five months for other students with disabilities (Newman et al., 2009). Disclosing one's disability is a necessary step to receiving accommodations in college; however, among college students with EBD who received special education services in high school, only 62% considered themselves to have a disability, and only 21% informed their postsecondary school of their disability or need for accommodations (Newman et al., 2009).

***Involvement with the criminal justice system.*** Young adults with EBD have high rates of involvement with the criminal justice system. According to Newman and colleagues (2009), young adults with EBD reported having been arrested (60%), having spent a night in jail (39%), and having been on probation or parole (39%) at rates more than double that of young adults in any other disability categories. Given this data, it is not surprising that a high percentage of incarcerated youth have been found to have mental health disorders. A study of over 1,400 across 29 programs and three states documented that 70.4% of youth in the juvenile justice system (i.e., in community-based programs, detention centers, and secure residential facilities) met the diagnostic criteria for mental health disorders and of those, more than 60% meet the criteria for three or more disorders (Shufelt & Coccozza, 2006). The most common types of disorders among incarcerated youth are disruptive disorders (e.g., conduct disorders), substance use disorders, anxiety disorders, and depression. To address concerns that the definition of conduct disorder overlaps with criteria for delinquent youth generally, Shufelt and Coccozza (2006) found that 66.3% met criteria for disorders other than conduct disorder.

Given the high rates of incarcerated youth meeting criteria for mental health disabilities, it is somewhat surprising that a national survey of state juvenile correction systems found that 33.4% of incarcerated youth have identified disabilities (Quinn, Rutherford, Leone, Osher, & Poirer, 2005); nonetheless that percentage far exceeds the percentage (9.2%) of students in the

general population identified with disabilities (U.S. Department of Education, 2009). Of those incarcerated youth identified with a disability, almost half (47.7%) have an emotional disturbance designation (Quinn et al., 2005). Quinn and colleagues (2005) noted that their findings likely underestimate the rate of incarcerated youth with disabilities: “The numbers reported by the states are a function of the ability and desire of those agencies and their facilities to obtain prior records for youth after they are transferred into juvenile corrections” (p. 342). Despite the fact that students with disabilities are overrepresented among incarcerated youth, special education services for adjudicated youth are provided infrequently (Morris & Thompson, 2008).

Transition supports for incarcerated youth with EBD are also lacking. Although model transition programs for incarcerated youth, such as Oregon’s Project STAY OUT (Unruh, Waintrup, & Canter, 2010) and the Arizona Detention Transition Model (Griller-Clark & Mathur, 2010), have shown promising results, transition supports for incarcerated youth are generally very poor (Unruh et al., 2010). Preventing involvement with the criminal justice system is certainly a priority. Davis, Banks, Fisher, and Grudzinskas (2004) found that youth and young adults with mental health diagnoses have the highest rates of criminal offenses between the ages of 18 and 20; therefore, they recommended intervening with students with mental health disorders prior to age 15 to reduce the likelihood of criminal justice offenses. Involvement with the criminal justice system has considerable costs to students’ future trajectories in terms of graduating from high school, securing employment, and enrolling in postsecondary institutions.

### ***Conceptual Framework***

The current study is based on Finn’s (1989) participation-identification model, which has been foundational in much of the engagement research conducted since his study first appeared

(e.g., Reschly & Christenson, 2006; Zablocki, 2009). In the participation-identification model, participation, a behavioral construct related to student actions in the classroom and in other school activities (e.g., extracurricular activities), and identification, a psychological construct related to feelings of connectedness to school, combine to determine whether or not students graduate from high school. Due in part to the limited availability of engagement predictors in the data this study is based on (i.e., the National Longitudinal Transition Study-2 [NLTS2]), the present study merges both behavioral and psychological engagement in a single construct, positive student engagement. Positive student engagement encompasses identification-related items, such as attitudes toward school, relationships with peers, teachers, and other adult mentors; and participation-related items, such as attaining good grades and being involved in school activities outside of class.

Two additional engagement-related components are important to the conceptual framework for the study: negative student engagement and family engagement. Negative engagement draws from student engagement research emphasizing the relationship between disengagement and school misbehavior (Jenkins, 1995) and includes such behaviors as being teased, being a bully, and being suspended or expelled. Family engagement refers to parenting practices at home and at school that encourage school success (Lindstrom et al., 2007). All three engagement constructs—positive student engagement, negative student engagement, and family engagement—are proposed as predictors of postschool outcomes among students with EBD.

Finally, recognizing the disparate outcomes among students with disabilities by race/ethnicity, family income, and gender (Newman et al., 2009), the study's conceptual framework is informed by intersectionality (Collins, 2000) insofar as it examined the extent to which student and family engagement predictors can be viewed as protective factors for students



with EBD whose position in terms of race/ethnicity, family income, or gender is associated with poorer postschool outcomes on the four criterion variables examined in the study: high school graduation, postsecondary education, employment, and involvement with the criminal justice system.

### **Summary**

As they transition from high school, students with EBD have distressing outcomes in four key areas: high school graduation, employment, postsecondary education enrollment, and involvement with the criminal justice system. These outcomes are worse for students from minority racial/ethnic groups and for students whose families have low incomes. Students whose families are more involved in their transition process—whether through involvement at school or at home—are likely to have better outcomes. Similarly, students with EBD who have high levels of positive student engagement (e.g., feeling connected to school, being involved in extracurricular activities) and low levels of negative student engagement (e.g., being bullied, being suspended) will be (a) more likely to graduate from high school, (b) more likely to enroll in postsecondary education, (c) more likely to be employed fulltime, and (d) less likely to be involved in the criminal justice system. The present study used logistic regression to examine the predictive value of demographic, family engagement, and positive and negative student engagement, on these four key postschool student outcomes.

### **Chapter 3: Methods**

This study of postschool outcomes of students with emotional or behavioral disabilities (EBD) examined the relationships between predictor variables—including demographic characteristics (i.e., race/ethnicity, family income, and gender), family engagement, and student engagement—and four criterion variables: rates of high school graduation, fulltime employment, postsecondary education enrollment, and arrest. The study hypothesis—that youth with EBD who have low levels of negative student engagement (e.g., being bullied, being suspended), high levels of parent engagement at home and at school, and high levels of positive student engagement (e.g., feeling connected to school, being involved in extracurricular activities) will have better postschool outcomes—dictated a logical sequence of analyses. First, appropriate predictor variables were identified and narrowed. Second, cross tabulations and mean comparisons of all variables by race/ethnicity, family income, and gender were conducted in order to examine patterns in mean differences for different demographic groups. Third, separate logistic regression analyses were conducted to measure the predictive value of demographic, negative student engagement, family engagement, and positive student engagement for each criterion variable. Data for students with EBD were drawn from the National Longitudinal Transition Study-2 (NLTS2), which includes a wide range of high school and post-high school variables with a nationally representative sample of students with disabilities.

#### ***The NLTS2 Data Set***

The NLTS2 has followed a cohort of students through five waves of data collection spanning 10 years (2000-2009), and beginning when students were ages 13-17 and in 7<sup>th</sup> grade or higher (Wagner, Kutash et al., 2005). One of the main purposes of NLTS2 is to document the “chain of experiences” (Wagner, Kutash et al., 2005, p. 26) connecting household characteristics

and high school services and supports to a range post-high school outcomes. NLTS2 utilized six methods for collecting data: phone interviews with parents, phone interviews with students, teacher surveys, review of student transcripts, direct student assessments, and interviews with building administrators (SRI International, 2000). Parents and youth not available for interviews were sent a survey through the mail. The data in the present study was taken from parent and youth interviews and surveys from Waves 1-4. In Wave 1, the source for all data on high school experiences in the current study, only parents were interviewed or surveyed. In Waves 2-4, the data set included combined variables for parent and youth responses with youth responses used when available.

Response rates for interviews or mailed questionnaires with parent, youth, or both for the entire NLTS2 sample decreased with each wave: 82% in Wave 1, 61% in Wave 2, and 50% in Wave 3, and 50% in Wave 4 (K. Valdes, personal communication, November 8, 2010). In the current study, data on school predictors was taken from Wave 1 parent interviews and data on postschool outcomes was taken from Waves 2-4. Youth interviews began with Wave 2, when 41.9% of youth completed interviews or mailed questionnaires, and continued in Wave 3, when 41.1% of youth completed interviews or mailed questionnaires. In examining the congruence of parent and youth responses to questions for four outcomes (e.g., currently working for pay, current hourly wage, worked for pay in last 2 years, belong to an organized group in the community), Newman and colleagues (2009) found a range of 69% to 80% congruence. They noted that “it is not possible to tell which of two discrepant responses is correct” (p. A-9) and suggested that the discrepancies could be the result of time differences (i.e., in some cases, several months passed between parent and youth interviews), in which case both responses

would be accurate though different. They also found that parent responses tended to be more negative (e.g., parents tended to report lower hourly wages than youth).

NLTS2 researchers provided weights to ensure that the sample would be representative of students nationwide with the same disability who “had received instruction in the kind of school district from which the sample was selected” (Wagner & Davis, 2006, p. 88). Data were collected using a sample of local education agencies (LEAs) stratified by region, size, and community wealth (Wagner, Kutash et al., 2005). LEAs selected for the sample were compared to the universe of LEAs along three variables: student racial/ethnic distribution, proportion attending college, and urban/rural status of the LEA. Comparisons indicated that African-American students and college bound students were under-represented, and Hispanic students and rural LEAs were underrepresented. Weights were developed to address these disparities: “LEA weights were calculated in order to achieve distributions on these variables that matched the universe, in addition to taking into account the stratification variables” (Wagner, Kutash et al., p. 29).

### ***Participants***

The sample was created by first drawing youth from Waves 2-4 who had EBD as primary diagnoses and who were not in secondary school in the past year. Table 1 shows the unweighted sample demographics based on the three race/ethnicity categories (i.e., White, African-American, and Hispanic students), the three family income categories (i.e., \$25,000 or less, \$25,000 to \$50,000, and above \$50,000), the two gender categories, and the ages of participants at the time school and outcome data was collected. The small number of respondents whose race/ethnicity was Asian/Pacific Islander, Native American/Alaska Native, or other/multiple

ethnicities, dictated that only White, African-American, and Hispanic students were retained in the final sample.

*Table 1: Demographic variables for unweighted sample (N = 450)*

<b>Characteristic</b>	<b>Number<sup>a</sup></b>	<b>%</b>
<i>Race/ethnicity</i>		
White	310	68.9
African-American	100	22.2
Hispanic	40	8.9
<i>Family income</i>		
\$25,000 or less	170	38.6
\$25,001 - \$50,000	140	31.8
More than \$50,000	130	29.5
<i>Gender</i>		
Male	330	73.3
Female	120	26.7
<i>Age when school data was collected (Wave 1)</i>		
13	20	4.4
14	90	20.0
15	100	22.2
16	130	28.9
17	110	24.4
<i>Age when outcome data was collected<sup>b</sup></i>		
18	20	4.5
19	70	15.9
20	90	20.5
21	90	20.5
22	90	20.5
23	80	18.2

<sup>a</sup>Values rounded to nearest 10 per restricted-use data set guidelines from the Institute of Education Sciences

<sup>b</sup>Values are for when postsecondary enrollment data was collected, the criterion variable with the fewest number of missing cases (N = 440).

Data for each participant was compiled from multiple waves. Wave 1, when the participants were ages 13 to 17 and in school, was used for information pertaining to the predictor variables on family and student engagement. Waves 2, 3, and 4, when participants were ages 18 to 23 and out of school, were used for data on the criterion variables. Cases missing all

or most of the values for the school data were deleted from the final sample ( $n = 450$ ). The sample was compiled strategically to maximize the time between data collected when students were in school and when they were out of school, which enabled a better portrait of the durability of family and student engagement experiences during school as students move from high school and into adult roles. Thus, data on outcomes were selected from Wave 4 first, with additional unique cases from Waves 2 and 3 added subsequently. School data from Wave 1 on family and student engagement was added to this set of participants' full outcome data. The mean age for participants during Wave 1 was 15.5 years (1.20 SD). In addition, if the data from Wave 4 was missing values for any of the criterion variables, values for Waves 2 or 3 were used instead. This procedure accounts for a slight difference in the mean years between collection points for different criterion variables: The mean time between data collection points was 5.3 years for the data on high school graduation and 5.4 years for all other criterion variables (i.e., postsecondary enrollment, fulltime employment, and arrest).

Human subjects approval was sought and received from the Human Subjects Committee-Lawrence (see Appendix). Access to the database was secured through an affidavit submitted as a part of Dr. Amy Gaumer Erickson's research using the NLTS2 database to explore high school experiences and postschool outcomes for students with disabilities (license number 10020031). The data was stored on a password-protected computer in a secured office.

### ***Predictor Variables***

The NLTS2 data set contains hundreds of variables on youth characteristics (including academic, behavior/social skills, and self-determination ratings), family/household characteristics, high school programming, and postschool outcomes. The research hypothesis and extant literature drove the search for variables representing the predictor and criterion variables

under consideration. Four categories of predictor variables were considered: demographic, negative student engagement, family engagement, and positive student engagement. It should be noted that the NLTS2 was not designed specifically to measure student engagement; thus, the negative and positive student engagement variables were compiled from multiple sections of the Wave 1 parent interview/survey data set. The four criterion variables were: high school graduation, postsecondary enrollment, fulltime employment, and arrest. High school graduation was included as a predictor in the models for postsecondary enrollment, employment, and arrest. Tables 2 through 6 contain names and responses for all predictor and criterion variables.

***Demographic.*** Three demographic variables were included in the analysis: race/ethnicity, family income, and gender (see table 2). Three categories of race/ethnicity were included: White, African-American, and Hispanic. As noted earlier, other race/ethnicity categories (i.e., Asian/Pacific Islander, Native American/Alaska Native) were excluded due to small sample sizes. The family income variable with the least missing data was coded into three categories in the data set: \$25,000 and under, \$25,001 to \$50,000, and above \$50,000. Gender was divided between male and female. Values were used from Wave 1 when available; values from later waves were used if no Wave 1 value was present. This is particularly important for the family income variable, which is subject to change over time.

*Table 2: Demographic predictor variables*

<b>Variable</b>	<b>Description</b>
1. Race/ethnicity <sup>a</sup>	1 White, 2 African American/Black, 3 Hispanic
2. Family income <sup>a</sup>	1 \$25,000 or less, 2 \$25,001 - \$50,000, 3 More than \$50,000
3. Gender <sup>a</sup>	1 Male, 2 Female

<sup>a</sup> Included in logistic regression models

***High school graduation status.*** High school graduation was included as an additional predictor variable for three of the criterion variables (excluding the high school graduation

criterion variable) in order to examine the relationship between high school graduation status and post-high school outcomes. The high school graduation variable was recoded from the original variable, which had the following responses: graduated, left voluntarily/dropped out, tested to get diploma or received certificate, temporarily suspended, permanently expelled, aged out/older than age limit, or other. In recoding, only those participants who responded that they graduated were coded as yes (1); all other responses were coded no (0). If respondents reported that students were temporarily suspended, values were drawn from other waves if available. The graduated response is the closest approximation to graduating with a regular high school diploma available in the data set, although it should be noted that parents and youth may have responded that the youth graduated when in fact he or she had received a GED, modified diploma, or certificate of completion (K. Valdez, personal communication, March 29, 2011).

***Negative student engagement.*** Negative engagement refers to behaviors associated with lower student engagement and misbehavior, such as bullying or being bullied, being teased, or being suspended or expelled. Table 3 shows the seven negative engagement variables, all pertaining to in-school occurrences: having been physically attacked, having been bullied, having been a bully, having things stolen, having been teased, and having been suspended or expelled. Coding was unchanged from the original data set in which values of 1 represented the presence of the item and values of 0 its absence.



Table 3: Negative student engagement predictor variables

Variable	Range of Responses
1. Youth has been physically attacked <sup>a</sup>	0 No, 1 Yes
2. Youth has been has been bullied <sup>a</sup>	0 No, 1 Yes
3. Youth has been has been a bully <sup>a</sup>	0 No, 1 Yes
4. Youth has had things stolen <sup>a</sup>	0 No, 1 Yes
5. Youth has been teased <sup>a</sup>	0 No, 1 Yes
6. Youth has been suspended or expelled <sup>a</sup>	0 No, 1 Yes

<sup>a</sup>Included in negative engagement scale, which was included in all regression models

**Family engagement.** Family engagement variables addressing three areas of family involvement were initially considered for inclusion in the regression models: family support at home, family support at school, and family involvement in organizations. Family members interact with school systems through participating in general meetings and parent/teacher conferences, volunteering at the school, and attending school and class events. Six items were considered: They support their children's school success at home by talking about school and helping with homework. The third variable is involvement with parent training or advocacy organizations (Kohler & Field, 2003). Family involvement is a key component of effective transition programming (Kohler & Field, 2003; Morningstar, 2006). Family engagement predictors considered for inclusion in the logistic models are listed in table 4.

Several of the family engagement variables were recoded. First, the variable regarding school-parent communication was reverse coded to be consistent with other variables. The original scale from 1 (very satisfied) to 4 (very dissatisfied) was recoded from 1 (very dissatisfied) to 4 (very satisfied). Next, for the item on attending IEP meetings, several values

were imputed based on interview/survey logic. Participants in the NLTS2 sample were initially selected because they were in special education: “NLTS2 is intended to involve a large, nationally representative sample of students in special education who are ages 13 through 16 and in at least 7<sup>th</sup> grade when the sample is selected” (Cameto, Wagner, Newman, Blackorby, & Javitz, 2000, p. 1-1). Nonetheless, when asked if their child was receiving special education, some parents responded that the student was not. It is possible that some students were exited from special education after the initial information was received. It is also possible that parents were unaware of their student being in special education or that they were not comfortable with the term. Respondents not asked the IEP involvement item were coded as 0 (i.e., not attending).

Some missing values for the homework assistance item were added, as well. Respondents were not asked the item, if they reported (a) that they did not live with the student or (b) that the student was in a residential institution. In both cases, responses were code as 1 (never helps with homework). Second, some responses indicated that the student did not receive homework, and these values were also recoded as 1 (i.e., never helps with homework). Thus, results to this item should be interpreted with some caution. Values for the two items related to family involvement in organizations were also adjusted. The item for involvement in support groups for families of youth with disabilities was not asked of parents who responded that the student was not in special education. Similar to the IEP meeting involvement item, responses indicating that the student was not in special education were assigned a 0 (i.e., not involved in parent organizations). Finally, the item on family involvement in programs for families of youth with disabilities was not asked of parents who indicated their student does not have problems/disability; these values were coded as 0 (i.e., not involved in programs for families of students with disabilities).

Table 4: Family engagement predictor variables

Variable	Range of Responses
1. How often parent attended general school meetings	0 Never, 1 1-2 times, 2 3-4 times, 3 5-6 times, 4 More than 6 times
2. How often parent attended parent-teacher conferences	0 Never, 1 1-2 times, 2 3-4 times, 3 5-6 times, 4 More than 6 times
3. How often parent attended school or class events <sup>a</sup>	0 Never, 1 1-2 times, 2 3-4 times, 3 5-6 times, 4 More than 6 times
4. How often parent volunteered at school	0 Never, 1 1-2 times, 2 3-4 times, 3 5-6 times, 4 More than 6 times
5. Parent satisfaction with school communication <sup>a</sup>	1 Very dissatisfied, 2 Somewhat dissatisfied, 3 Somewhat satisfied, 4 Very satisfied
6. Parent/guardian attended IEP meeting	0 No, 1 Yes
7. How often parent discussed school with student <sup>a</sup>	1 Not at all, 2 Rarely, 3 Occasionally, 4 Regularly
8. How often parent helped student with homework <sup>a</sup>	1 Never, 2 Less than once a week, 3 1-2 times a week, 4 3-4 times a week, 5 5 or more times a week
9. Parent participated in programs for families of youth with disabilities	0 No, 1 Yes
10. Parent belonged to support groups for families of youth with disabilities	0 No, 1 Yes

<sup>a</sup> Included in logistic regression models

**Positive student engagement.** Positive engagement refers to behavioral and emotional engagement items that are associated with student engagement (Finn, 1989), such as involvement in school activities outside of class, grades, enjoyment of school, and positive relationships with peers and teachers. Table 5 shows the eight positive engagement items. Emotional engagement items included: how well the youth enjoys school and gets along with teachers and other students, to what extent an adult at school knows or cares about the youth, and whether the school was providing the appropriate support and services to the student and meeting the student's individual needs. Behavioral engagement items included an appraisal of the student's

overall grades or quality of work and whether or not the students had been engaged in school activities outside of class (e.g., extracurricular activities).

*Table 5: Positive student engagement predictor variables*

<b>Variable</b>	<b>Range of Responses</b>
1. Youth enjoys school <sup>a</sup>	1 Strongly disagree, 2 Disagree, 3 Agree, 4 Strongly disagree
2. Youth gets along with other children <sup>a</sup>	1 Not well at all, 2 Not very well, 3 Pretty well, 4 Very well
3. Youth gets along with teachers <sup>a</sup>	1 Not well at all, 2 Not very well, 3 Pretty well, 4 Very well
4. An adult at school know and cares about youth <sup>a</sup>	1 Strongly disagree, 2 Disagree, 3 Agree, 4 Strongly disagree
5. Youth is getting needed support and services <sup>a</sup>	1 Strongly disagree, 2 Disagree, 3 Agree, 4 Strongly disagree
6. School meets individual needs of youth <sup>a</sup>	1 Strongly disagree, 2 Disagree, 3 Agree, 4 Strongly disagree
7. Youth is involved in school activities outside of class <sup>a</sup>	0 No, 1 Yes
8. Youth overall work or grades <sup>a</sup>	1 Failing or mostly Ds and Fs, 2 Below average or mostly Cs and Ds, 3 Average or mostly Bs and Cs, 4 Above average or mostly As and Bs 5 Excellent or mostly As

<sup>a</sup>Included in positive engagement scale, which was included in all regression models

Several positive engagement items were recoded for consistency. Four items (i.e., adult at school knows or cares about youth, youth enjoys school, school provides needed support and services to student, and school meets individual student needs) were reverse coded: original values of 1 (strongly agree) to 4 (strongly disagree) were recoded as 1 (strongly disagree) to 4 (strongly agree). Two additional items (how well youth gets along with teachers and gets along with other students) were reverse coded, as well: original values of 1 (very well) to 4 (not at all well) were recoded as 1 (not at all well) to 4 (very well).

The grades or school work variable (asking what grades or quality of work the student best characterized the student's school performance) was recoded to include more values. In the original item, parents could respond with an "other" option ("wide grade range"); these

responses were replaced with values of 3 (i.e., average grades). The direction of the grade/school work was reverse coded for consistency. One value of 91 (“other”) was recoded as missing and imputed later. The grades and school work variable was also reverse coded from the original scale (highest to lowest) to be consistent with other variables.

### ***Criterion Variables***

For youth with EBD, high school graduation rates and post-high school outcome rates for employment, postsecondary education enrollment, and involvement with the criminal justice system are among the worst of all disability groups (Newman et al., 2009). Data for criterion variables were drawn from Waves 2-4 of the youth and parent interviews or mailed questionnaires. Table 6 shows the four criterion variables, which address whether participants (a) have graduated from high school, (b) are currently employed fulltime, (c) have ever attended a postsecondary institution (i.e., 2-year or 4 year colleges, vocational programs), and (d) have ever been arrested.

*Table 6: Criterion variables*

<b>Variable</b>	<b>Description and Range of Responses</b>
Youth has graduated from high school	0 No, 1 Yes
Youth is currently enrolled in a postsecondary institution	0 No, 1 Yes
Youth is currently working 35 or more hours per week at current job or all current jobs combined	0 No, 1 Yes
Youth has been arrested	0 No, 1 Yes

***High school graduation.*** High school graduation, a key outcome for predicting later adult success in terms of postsecondary enrollment and employment, was included as a criterion variable. Detailed information for this variable can be found above in the predictor variable section.

***Enrollment in postsecondary institutions.*** The postsecondary enrollment criterion variable asked if youth had been enrolled in any kind of postsecondary institution, including vocational training programs, 2-year colleges, or 4-year colleges. This item was selected in order to give the most comprehensive picture of postsecondary enrollment. It should be noted that students with EBD are far more likely to attend vocational (20.6%) or 2-year institutions (23.2%) than 4-year institutions (5.5%; Newman et al., 2009). In addition, a related item on current postsecondary enrollment was determined to be inappropriate for inclusion, due to the small number of participants with yes responses: regrettably, only about 10% of students in the sample responded that they were currently attending postsecondary institutions. Logistic regression is more suitable for criterion variables with more evenly divided responses (Hosmer & Lemeshow, 2000).

***Employment.*** The item pertaining to employment asked if the youth was currently employed fulltime (i.e., 35 or more hours per week), either in a single job or across multiple jobs. The relevant variable in the data set was asked only of youth who reported being employed in the past two years and/or currently. In compiling the variable, respondents without jobs in the past two years and respondents whose weekly hours were less than 35 were given a 0 value. Respondents working 35 or more hours a week were given a 1 value.

***Arrest.*** A central concern for research addressing students with EBD is their high rates of involvement with the criminal justice system. The arrest criterion variable was if the youth had ever been arrested. This item was selected due to the relative paucity of missing data compared to similar items. For example, the item asking youth if they had been arrested in the past two years was missing over 30% of values.

### **Imputing Missing Data**

Missing data is a concern for most national data sets, and the NLTS2 is no exception. In logistic regression, like other forms of regression, cases with any missing data are omitted from the analysis. Missing data was imputed with single imputation techniques using expectation maximization in SPSS (Acock, 2005). This approach is preferred over more traditional methods of handling missing data, such as list- or pairwise deletion, because it maintains all cases, and over mean imputation, because it is sensitive to trends in data across multiple variables. Missing values are imputed in a new data set “based on the observed relationships among all the variables, and [the procedure] injects a degree of random error to reflect uncertainty of imputation” (Acock, 2005, p. 1018). Table 7 shows the number and percentage of missing values for each variable and the means before and after imputation. With one exception (parent engagement through helping with homework), all variables had less than 10% missing data. Although means for all variables were very similar before and after imputation, results should be interpreted with some caution any time missing data imputation is conducted.

Table 7: Missing data imputation for unweighted sample

Variable	Approx. % Missing <sup>a</sup>	Mean Before Imputation	Mean After Imputation
<i>Demographic</i>			
Family Income	<5	1.94	1.94
<i>Negative student engagement</i>			
Physically attacked	<5	0.37	0.37
Been bullied	<5	0.41	0.41
Bullied others	5-10	0.30	0.29
Had things stolen	<5	0.35	0.35
Been teased	5-10	0.64	0.64
Suspended or expelled	<5	0.71	0.71
<i>Family Engagement</i>			
General School Meetings	<5	1.20	1.25
Parent/teacher conferences	<5	1.39	1.40
School or class events	<5	1.17	1.23
Volunteered at school	5-10	0.35	0.47
School/parent communication	<5	3.09	3.10
Attended IEP meeting	<5	0.86	0.85
Helped with homework	>10	2.63	2.64
Discussed school	5-10	3.81	3.66
Belong to support group	<5	0.13	0.13
<i>Positive Student Engagement</i>			
Enjoys school	<5	2.62	2.61
Gets along with other children	<5	2.90	2.89
Gets along with teachers	<5	3.07	3.06
Adult at school cares about youth	<5	3.29	3.22
Gets needed support and services	<5	2.84	2.84
School meets individual needs	<5	2.82	2.81
Participated in school activities outside of class	<5	0.37	0.37
Grades/school work	<5	2.83	2.84

Note: variables not included in the table had values for all cases

<sup>a</sup>Specific numbers and percentages for missing cases were excluded per Institute of Education Sciences guidelines for restricted use data sets

### ***Selection of Predictor Variables***

Given recommendations for logistic regression of approximately one predictor for every 50 cases (Spicer, 2005), a target of about 10 predictors per model was established. Two strategies were employed to reduce the number of predictors. First, related predictors were assembled into



a single composite scale provided the scale had acceptable reliability. The six negative student engagement (Chronbach's  $\alpha = .691$ ) and eight positive student engagement (Chronbach's  $\alpha = .737$ ) predictors had acceptable reliability estimates. Thus, each was used as a single variable in the logistic regression models. The positive and negative student engagement scales had a moderate correlation ( $r = -.391$ ,  $p < .01$ ). Coupled with the different correlations each scale has with criterion variables (see Tables A1, A2), this relationship suggests that negative and positive engagement are distinct constructs, which merits the inclusion of the scales as separate predictors in the models. A stronger correlation would suggest that the two scales are measuring the same construct.

Unlike the negative and positive student engagement scales, a scale combining the ten family engagement predictors was found to have low reliability (Chronbach's  $\alpha = .455$ ). Even with the omission of variables, the scale was below a .500 alpha level. Therefore, a second strategy for reducing the number of family engagement predictors was used. A correlation matrix was assembled for family engagement predictors to examine correlations among the predictors, as well as between predictors and criterion variables. All correlations were evaluated with two tails using Spearman's *rho*, which is suitable for categorical variables.

Table 8 contains the correlations for all family engagement predictors and criterion variables; correlation matrices for the other predictors (i.e., demographic, negative engagement, positive engagement) are available in the appendix (Tables A1-A3). The family engagement table shows the correlations for the ten family engagement predictors: family involvement at school through general meetings, parent-teacher conferences, school or class events, volunteering, school-parent communication, and IEP meetings; family involvement at home through helping with homework and discussing school; and family involvement in organizations

through programs for families and support groups. Most of the family engagement variables correlated with small to moderate effect sizes. The strongest relationships (i.e., moderate effect sizes) were between attending general school meetings and involvement in school or class events ( $r = .377$ ), between helping with homework and attending IEP meetings ( $r = .315$ ), and between the two forms of involvement with organizations (i.e., in programs and in support groups for families of students with disabilities;  $r = .322$ , all at  $p < .01$ ). Two additional relationships (i.e., between attending school or class events and volunteering at school, and between attending IEP meetings and discussing school) had effect sizes very close to the moderate level (both at  $p < .01$ ).

Patterns of correlations between family engagement predictors and the criterion variables were evaluated through the number of statistically significant relationships, as well as the strength of the relationship. Four parent engagement variables correlated more often with criterion variables: attending school or class events, helping with homework, discussions about school, and school-family communication. Attending school or class events and helping with homework had significant correlations with all four criterion variables. Discussing school correlated significantly with three of the four criterion variables: high school graduation, postsecondary enrollment, and arrest. The school-family communication variable had significant correlations with high school graduation and arrest (both at  $p < .01$ ). Attending parent-teacher conferences had a small correlation with high school graduation, and parent engagement with support groups for families of students with disabilities correlated negatively with fulltime employment ( $r = -.175$ ,  $p < .01$ ). All correlations between family engagement predictors and criterion variables were small in effect size.

Table 8: Correlations Between Family Engagement Predictors and Criterion Variables

Measure	1	2	3	4	5	6	7	8	9	10
1. General school meeting	--									
2. Parent-teacher conferences	.126**	--								
3. School or class events <sup>a</sup>	.377**	.199**	--							
4. Volunteered at school	.221**	.105*	.297**	--						
5. School/parent communication <sup>a</sup>	.011	-.060	.027	.051	--					
6. Attended IEP meeting	.019	.135**	.038	-.083	-.050	--				
7. Helped with homework <sup>a</sup>	.030	.078	.031	-.139**	.044	.314**	--			
8. Discussed school <sup>a</sup>	.113*	.066	.116*	-.059	.090*	.296**	.221**	--		
9. Programs for families	.123**	.178**	.104*	.040	-.060	.127**	.006	.062	--	
10. Support groups for families	.114*	.032	.007	.125**	-.016	.078	.175**	-.052	.322**	--
11. HS Graduation	-.009	-.101*	.109*	.008	.179**	.081	.101*	.158**	.034	-.025
12. Postsecondary since high school	.052	.046	.104*	.086	.051	.027	-.101*	.096*	.075	-.014
13. Currently working fulltime	-.091	-.037	.135**	.040	-.043	-.050	-.122*	.018	-.069	-.175**
14. Ever arrested	.039	.079	-.059*	.105*	-.161**	-.029	-.113*	-.111*	.087	.065

Note: \*p < .05, \*\*p < .01

<sup>a</sup> included in logistic regression models

***Final variable selection.*** Scale reliability estimation and correlation strategies resulted in the final predictor variables included in the models. The negative and positive student engagement scales had acceptable reliability and were included in all models, which also contained the following four family engagement variables that correlated most frequently and strongly with the criterion variables: frequency of attending school or class events, parent rating of the quality of school and parent communication, frequency of parent help with homework, and frequency of parent-student discussions about school. Thus, the models for each criterion variable included the following variables: three demographic variables (i.e., race/ethnicity, family income, and gender), four family engagement variables, the negative engagement scale, and the positive engagement scale. An additional predictor, high school graduation status, was added to the models for postsecondary enrollment, fulltime employment, and arrest. In total, the stepwise regression model for high school graduation contained nine predictor variables, and the regression models for the other three criterion variables contained ten predictors. Ranges, means and standard deviations for all predictor variables included in the models, as well as for the criterion variables, are in table 9.

*Table 9: Ranges, means, and standard deviations for all variables included in the regression models*

Variable	Range	Mean	Standard Deviation
<i>Predictor Variables</i>			
Negative student engagement scale	0-6	2.81	1.79
School and class events	0-4	1.28	1.45
School-parent communication	0-4	3.14	0.98
Help with homework	1-5	2.67	1.39
Discuss school	1-4	3.68	0.75
Positive student engagement scale	9-30	20.71	4.00
<i>Criterion Variables</i>			
High school graduation	0-1	0.61	0.49
Postsecondary enrollment	0-1	0.31	0.46
Fulltime employment	0-1	0.42	0.49
Arrest	0-1	0.51	0.50

### ***Data Analysis***

Data analysis occurred in two steps. First, cross tabulations were conducted to examine patterns of relationships between predictor and criterion variables aggregated by race/ethnicity, family income, and gender. Significant differences were identified using independent samples t-tests conducted in SPSS. Second, logistic regression procedures were used to examine the relationship between predictor and criterion variables. Both analyses were conducted using weights supplied in the data set in order to better generalize results and adjust for sampling bias. An adjusted weight variable was created by dividing each weight value by the mean for all values, in order to adjust standard errors; without the adjustment, SPSS uses the standard errors of the much larger weighted sample, which leads to significant *p*-values for nearly all calculations (Thomas & Heck, 2001).

Unlike the more common multiple regression techniques, logistic regression is suitable for dichotomous criterion variables that do not have normal distributions, an assumption of multiple regression (Hosmer & Lemeshow, 2000); instead, the logistic function is a sigmoid or S-shaped curve that bends approaching the 0 and 1 bounds (DeMaris, 1995). In addition, dichotomous criterion variables violate the assumption of homoscedasticity (i.e., equal variances), because the variance in errors is different near the floor and ceiling of the curve where the line approaches 0 and 1 (Pampel, 2000). Thus, “the standard errors in the presence of heteroscedasticity will be incorrect and tests of significance will be invalid” (Pampel, p. 9). Logistic regression uses the natural logarithm of the odds—the logit or logged odds—to account for the decreasing effects of X as Y approaches 0 and 1.

Logistic regression is a method of “linearizing the inherent nonlinear relationship between X and the probability of Y” (Pampel, 2000, p. 14), which results in a linear function with optimally weighted coefficients for each predictor variable such that the linear combination makes observed outcomes in the criterion variables most probable. Logistic regression procedures result in odds ratios, enabling statements about how much more or less likely it is for outcomes to occur for each predictor. For example, an odds ratio of 1 implies no relationship between the variables, an odds ratio of 4.0 suggests that the criterion variable is four times more likely to occur when the predictor variable is present, and an odds ratio of .25 suggests that the criterion variable is four times less likely to occur when the predictor is present. According to Pampel, significance testing for logistic regression is similar to that of multiple regression: the basis for tests in both is the size of the coefficient relative to its standard error (Pampel, 2000). Logistic regression commonly uses the Wald statistic, which applies the chi-square distribution in comparing the square of the ratio of the coefficient divided by its standard error. Alpha will be

set at .05 for all tests of significance. In contrast to multiple regression, which requires the calculation of a standardized coefficient to estimate effect sizes, logistic regression provides effect sizes that are readily interpretable from the odds ratio.

Stepwise logistic regression was used for each of the four criterion variables: high school graduation, postsecondary enrollment, fulltime employment, and arrest. Entering one or more variables in sequential blocks enabled a more nuanced analysis of the relative contribution of different variables than would an analysis based on entering all variables in a single block. The particular sequence of steps was based on the hypothesis and conceptual framework for the study. First, high school graduation and postschool outcomes among students with EBD differ depending on students' race/ethnicity, gender, and family income among students. Second, these outcomes are (a) worsened by negative engagement and (b) improved by two forms of engagement: family engagement and positive student engagement (i.e., positive feelings toward school, good grades and school work, involvement in school activities). Third, high school graduation status was added as an important predictor for the three postschool outcomes: postsecondary enrollment, fulltime employment, and arrest.

Four steps were used in the high school graduation model: the three demographic variables (i.e., race/ethnicity, family income, and gender) were in the first block, followed by the negative engagement scale in block 2, the four family engagement variables in block 3, and the positive engagement scale in block 4. High school graduation status was added as a predictor to the other three criterion variables. Thus, the sequence of blocks for those three models was: demographic predictors in block 1, high school graduation status in block 2, the negative engagement scale in block 3, family engagement variables in block 4, and the positive engagement scale in block 5. Model fit was evaluated using maximum likelihood procedures,

wherein the log likelihood of the baseline model with only the constant is compared to successive model iterations. Significant differences between models were estimated using the chi-square distribution with degrees of freedom equal to the number of predictor variables in the model.

### **Summary**

Data for the current study was drawn from the National Longitudinal Transition Study-2 (NLTS2), which is comprised of a wide range of items related to the transition from school to adulthood among youth with disabilities. The aim of this study—to examine the degree to which demographic and family and student engagement variables predict postschool outcomes—dictated the initial selection of variables. Variables were recoded and missing data for predictors was imputed. Predictors were selected for inclusion in the stepwise regression models based on reliability and correlation analyses. Nine variables were selected for inclusion in the high school graduation model, and ten in the postsecondary enrollment, employment, and arrest models. The next chapter presents the results of the cross tabulations and logistic regression analyses.



## **Chapter 4: Results**

Data analysis was based on the hypothesis and conceptual framework for the study, which suggest that the poor high school graduation and postschool outcomes among students with emotional or behavioral disabilities (EBD)—outcomes that differ depending on students' race/ethnicity, gender, and family income among students—are (a) worsened by negative engagement and (b) improved by two forms of engagement: family engagement and positive student engagement (i.e., positive feelings toward school, good grades and school work, involvement in school activities). These four elements—demographic variables, negative student engagement, family engagement, and positive student engagement—were the building blocks for the stepwise logistic regression models. Data analysis followed two steps. First, demographic differences were examined through cross tabulations of criterion variables and mean comparisons of predictor variables. These descriptive statistics provided a summary of the differential outcomes for students with EBD based on their race/ethnicity, gender, and family income. Second, to examine the relative contribution of the predictor variables, four separate logistic regressions were conducted, one for each of the criterion variables: high school graduation, employment, postsecondary education, and arrest.

### **Cross Tabulations and Comparison of Means by Demographic Variables**

Cross tabulations and comparison of means were conducted to (a) compare the means for the variables included in the regression models disaggregated by race/ethnicity, family income, and gender, and (b) identify patterns of disparate mean scores for predictor and criterion variables for different demographic groups. Independent samples t-tests were conducted in SPSS using the weighted sample to assess if differences were statistically significant. Comparisons for race/ethnicity were between White and African-American students, and between White and

Hispanic students. Comparisons for family income were between students from families with low incomes (i.e., \$25,000 or less) and with high incomes (i.e., above \$50,000), and between students from families with middle incomes (i.e., \$25,000 to \$50,000) and with high incomes. Results are presented in four sections: cross tabulations for criterion variables and comparison of means for predictor variables. Although the following discussion pertains only to predictor variables included in the regression models, mean comparison tables for all negative student engagement, family engagement, and positive student engagement predictor variables are available in the appendix (tables A4 through A6).

### ***Criterion Variables***

Table 10 shows the differences in outcomes by race/ethnicity, family income, and gender. Trends based on this descriptive analysis showed disparate outcomes for all four criterion variables, though the particular demographic areas differed for each outcome. In terms of race/ethnicity, African-American students were significantly less likely than White students to graduate from high school or to have fulltime employment. Hispanic students were significantly less likely than White students to graduate from high school. In terms of family income, students from families with incomes at or below \$25,000 had significant differences from students with family incomes above \$50,000 for all four criterion variables: Students in the low-income group were less likely than students from the high-income group to have graduated from high school, to have been enrolled in postsecondary education, and to be working fulltime; conversely, they were more significantly more likely to have been arrested. Students from families with incomes between \$25,000 and \$50,000 were significantly less likely to have graduated from high school. In terms of gender, female students were significantly more likely than male students to have

graduated from high school and significantly less likely to be employed fulltime or to have been arrested.

*Table 10: Cross tabulations of race/ethnicity, gender, and family income by criterion variables*

	Race/Ethnicity			Family Income			Gender	
	White	Afr. – Amer.	Hisp.	≤ \$25,000	\$25,000- \$50,000	> \$50,000	Male	Female
HS grad. <sup>a</sup>	66.7	50.0**	47.5*	46.7***	65.0*	76.3	58.3	68.9*
Postsec. enroll.	31.3	33.0	25.6	24.6**	30.1	40.6	30.0	34.5
Fulltime employ.	47.6	21.7***	43.6	30.6**	49.3	47.3	47.4	26.5***
Arrest	49.8	56.0	48.8	58.4**	50.7	42.1	54.3	41.6*

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; values are percentage of participants with affirmative responses

<sup>a</sup> included as a predictor variable for postsecondary enrollment, fulltime employment, and arrest regression models

### ***Predictor Variables***

Table 11 shows the cross tabulations for the six predictor variables included in the logistic regression models: the negative student engagement scale, parent involvement in school and class events, school-parent communication, parent help with homework, parent discussions of school, and the positive student engagement scale. In terms of race/ethnicity, African-American students had significantly lower mean scores than White students on the negative student engagement scale, and for family engagement via school and class events and discussions of school. Hispanic students had significantly lower mean scores than White students for family engagement through school or class events and discussions of school. In terms of family income, students from families with incomes at or below \$25,000 had significantly lower

mean scores than students from families with incomes above \$50,000 on family engagement via school or class events and discussions of school. Students from families with incomes between \$25,000 and \$50,000 had significantly lower scores for family engagement via school discussions. Finally, for gender, female students had significantly lower scores for parent engagement through helping with homework. No significant differences were found for the school-parent communication variable or for the positive student engagement scale.

*Table 11: Comparison of mean for race/ethnicity, gender, and family income by predictor variables*

	Race/Ethnicity			Family Income			Gender	
	White	Afr. – Amer.	Hisp.	≤ \$25,000	\$25,000-\$50,000	> \$50,000	Male	Female
Neg. Eng. Scale	2.97	2.32**	2.68	2.92	2.76	2.70	2.89	2.56
School and class events	1.46	0.92**	0.79**	0.91***	1.44	1.58	1.27	1.31
Sch-par. comm.	3.13	3.23	3.00	3.10	3.18	3.14	3.13	3.18
Help with homework	2.66	2.75	2.55	2.71	2.63	2.67	2.59	2.89*
Discuss school	3.76	3.55*	3.38*	3.56**	3.67*	3.84	3.67	3.71
Pos. Eng. Scale	20.56	21.10	20.98	20.74	20.73	20.66	20.50	21.32

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001; values are means for each group

### Logistic Regression Models

Modeling for each of the criterion variables was conducted in hierarchical steps using the predictor variables determined to be appropriate by prior analyses. Each criterion variable had models containing the following blocks of predictor variables: demographic, negative engagement, family engagement, and positive engagement. High school graduation status was

added as a predictor for postsecondary enrollment, fulltime employment, and arrest. For those three criterion variables, the high school graduation variable was entered as the second step, between demographics and negative engagement.

### ***High School Graduation***

The high school graduation criterion variable was examined in four models, each containing the following blocks: demographics, negative engagement, family engagement, and positive engagement. Detailed results for each model for the high school graduation variable are available in the appendix (tables A17 to A19), and a summary of all models is presented in Table 12.

***Demographics.*** Step (or model) 1 for the high school graduation criterion variable contained the three demographic predictors: race/ethnicity, family income, and gender. Table A7 shows the coefficients, standard errors, odds ratios, and 95% confidence intervals. The chi-square from the omnibus test for this model suggested that the three demographic categories significantly predicted high school graduation ( $\chi^2 = 37.231$ ,  $df = 4$ ,  $p < .001$ ). The classification table indicated that the model correctly classified 63.4% of the cases, and the pseudo  $R^2$  (Nagelkerke) was .111. The constant (1.055) value is the Beta (B) coefficient for the reference group (i.e., White, male students with family incomes above \$50,000). B coefficients were tested with the Wald chi-square statistic, a test of the null hypothesis that the B coefficient is equal to zero for each individual predictor. The odds ratio (OR) for this reference group was 2.871, meaning that this group is close to three times more likely to graduate than the rest of the sample. The odds of graduating with a high school diploma were significantly lower for students from low-income families (OR = .310;  $p < .001$ ). In other words, students from families with incomes at or below \$25,000 were more than three times less likely to graduate from high school than

students from families with incomes above \$50,000. The odds ratios for African-American (OR = .679) and Hispanic (OR = .667) students suggested that both groups were less likely to graduate than White students, but these values did not reach statistical significance. In addition, female students were significantly more likely to graduate than male students (OR = 1.781,  $p < .05$ ), which suggests that female youth with EBD are about 1.8 times more likely to graduate than male youth with EBD.

**Negative engagement.** The negative engagement scale was added to the demographic variables in the second high school graduation model. The omnibus model coefficient suggested this variable significantly predicted high school graduation ( $\chi^2 = 45.036$ ,  $df = 6$ ,  $p < .001$ ), and the block chi-square suggested that the negative engagement scale was a significant predictor on its own ( $\chi^2 = 7.805$ ,  $df = 1$ ,  $p < .01$ ). The classification table indicated that the model correctly classified 65.7% of the cases, an increase of about 2% over the first step. The pseudo  $R^2$  (Nagelkerke) was .133, suggesting that the second step explained 2% more of the variance than the first step. Table A8 shows the coefficients, standard errors, and odds ratios for the second high school graduation model. The negative engagement scale was statistically significant ( $p < .01$ ), and the odds ratio of .848 suggests that every unit increase on the seven-point negative engagement scale is associated with a 15% decrease in the odds of graduating from high school. Odds ratios for students from families with incomes of \$25,000 or less and for females remained nearly the same in step 2. The odds ratio for African-American students reached statistical significance (OR = .579,  $p < .05$ ) in this step.

**Family engagement.** In the third step, the four family engagement variables were added. The omnibus model coefficient suggested that all predictors in step 3 significantly predicted high school graduation ( $\chi^2 = 61.695$ ,  $df = 10$ ,  $p < .001$ ), and the block chi-square suggested that the

family engagement variables were significant predictors on their own ( $\chi^2 = 16.659$ ,  $df = 4$ ,  $p < .01$ ). The classification table indicated that the model correctly classified 68.5% of the cases, an increase of about 3% over the previous step. The pseudo  $R^2$  (Nagelkerke) of .178 was an increase of about 4.5% compared to the previous step. As Table A9 shows, one of the four family engagement variables was statistically significant: the parent rating of the quality of communication from the school ( $p < .05$ ). The odds ratio of 1.320 for this variable suggests that the odds of high school graduation increase by about 30% for each unit increase on the four-point scale of parents' rating of the quality of communication from the school.

***Positive engagement.*** In the final model for high school graduation, the emotional engagement scale was added. The omnibus test with the positive engagement scale included was significant ( $\chi^2 = 86.302$ ,  $df = 11$ ,  $p < .001$ ) as was the block chi-square ( $\chi^2 = 24.607$ ,  $df = 1$ ,  $p < .001$ ). This step correctly classified 70.9% of the cases, an increase of about 2.5% over the previous step. Likewise, the pseudo  $R^2$  (Nagelkerke) of .243 was an increase of about 6.5% from the previous step. Table A10 shows details for the model. For each unit increase on the 18-unit emotional engagement scale, the corresponding odds of graduating increase about 18%. The odds of graduating for students from families with low incomes remained robust ( $OR = .296$ ,  $p < .001$ ). Race/ethnicity, gender, negative engagement, and the family involvement predictors were not statistically significant in the final model for high school graduation.

***High school graduation summary.*** Table 12 (below) shows the summary of the odds ratios for the predictors included in the four models for high school graduation. The final model correctly classified 70.9% of cases, an improvement of 7.5% over the model with only demographic variables added. Demographic variables represented a significant improvement over the null model, and each subsequent model made a statistically significant contribution

compared to the previous one. Models 2 through 4 each correctly classified 2-3% more of the cases.

*Table 12: Summary: Odds Ratios of All Predictors for High School Graduation (N = 440)*

Variables	Step 1	Step 2	Step 3	Step 4
<i>Demographic</i>				
African-American	.679	.579*	.598	.600
Hispanic	.667	.607	.725	.661
\$25,000 and under	.310***	.332***	.351***	.296***
\$25,001-\$50,000	.644	.646	.644	.609
Female	1.781*	1.748*	1.696*	1.577
<i>Negative Engagement</i>				
Scale		.848**	.864*	.961
<i>Family engagement</i>				
Attending school or class events			1.105	1.034
School communication			1.320*	.999
Helping with homework			1.135	1.138
Discussing school			1.306	1.275
<i>Positive engagement</i>				
Scale				1.182***

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

Odds of graduating from high school were over three times lower for students from low-income families than for students from high-income families. This relationship persisted for each step. Odds of graduating among females, initially significantly higher, were statistically equivalent to the odds for males when the positive engagement variable was added. The odds of graduating among African-American students was initially not significant; with the addition of the negative engagement variable, their odds were significantly lower compared to White students; and with the addition of the family engagement variables and then the positive engagement variable, the odds of graduating among African-Americans returned to non-significance.



When added in step 2, the negative engagement scale was a significant predictor of high school graduation, with an increase in a unit on the scale associated with 15% lowered odds of graduating. These odds lowered slightly with the addition of the family engagement variables, and negative engagement was no longer significant with the addition of the emotional engagement scale. One family engagement variable (i.e., school-parent communication) was statistically significant when added to the model. A unit increase in the quality of communication was associated with an increase in the odds of graduating of 32%. With the addition of emotional engagement, no family engagement variable was significant. Finally, the positive engagement was a significant predictor: a unit increase on the positive engagement scale was associated with an 18% increase in the odds of graduating from high school.

### ***Postsecondary Enrollment***

The item for the postsecondary enrollment variable asked whether or not the youth had been enrolled in a postsecondary institution (e.g., two-year or four-year college, vocational training program) since they had left high school. The postsecondary enrollment criterion variable was analyzed in five steps: demographics, high school graduation status, negative student engagement, family engagement, and positive student engagement. Detailed results for each model for the postsecondary enrollment variable are available in the appendix (tables A11 to A15), and a summary of all models is presented in Table 13.

***Demographics.*** Race/ethnicity, family income, and gender were entered in step 1. The omnibus test of the model was significant ( $\chi^2 = 12.250$ ,  $df = 5$ ,  $p < .05$ ). In this step, 70.1% of the cases were correctly classified, and the pseudo  $R^2$  (Nagelkerke) was .039. Model details are shown in Table A11. The B coefficient (-.437,  $p < .05$ ) for the reference group (i.e., White, male students with family incomes above \$50,000) suggests that students in the reference group are

significantly less likely to have been enrolled in postsecondary education than members of other groups. Among the demographic variables, only family income was a significant predictor of postsecondary education enrollment ( $OR = .409, p < .01$ ). Thus, among students with EBD, students from families with incomes of \$25,000 or below were over two times less likely to have enrolled in postsecondary education since high school. Though not statistically significant, the odds of African-American students enrolling in postsecondary were higher than for White students.

***High school graduation status.*** The high school graduation status predictor was added in step 2, and results are shown in Table A12. The omnibus test of the model was significant ( $\chi^2 = 44.659, df = 6, p < .001$ ). The variables in this step correctly classified 69.4% of the cases, a slight decrease compared to the model with only demographic predictors; however, the pseudo  $R^2$  (Nagelkerke) was .136, an increase of almost 10% over the previous block. Graduation status was a significant predictor of postsecondary enrollment ( $p < .001$ ), and high school graduates were almost four times more likely to report having been enrolled in postsecondary education at some time since high school. After accounting for high school graduation status, race/ethnicity and family income were significant predictors, as well, with African-American students being significantly more likely, and students from low-income families less likely, to have been enrolled in postsecondary education (both at  $p < .05$ ).

***Negative engagement.*** The negative engagement scale variable was added in the third step for postsecondary education. The omnibus test of this model was significant ( $\chi^2 = 45.441, df = 7, p < .001$ ), but the model chi-square was not ( $\chi^2 = .783, df = 1, p = .376$ ). Thus, the negative engagement variable did not add statistically predictive value to the model. Model details are shown in Table A13. This model correctly classified 69.0% of the cases, a slight decrease from

the previous model, and the pseudo  $R^2$  (Nagelkerke) of .139 was virtually unchanged. The high school graduation variable remained a robust predictor of postsecondary enrollment (OR = 3.894), and low family income continued to be a statistically significant predictor ( $p < .05$ ).

**Family engagement.** In step 4 for postsecondary education, the four family engagement predictors were added: involvement in school or class events, school-family communication, helping with homework, and discussing school. The omnibus test of the model with the new variables was significant ( $\chi^2 = 58.419$ ,  $df = 11$ ,  $p < .001$ ), and the block chi-square was statistically significant ( $\chi^2 = 12.978$ ,  $df = 4$ ,  $p < .05$ ). This model correctly classified 70.8% of the cases, a slight increase over the previous block, and the pseudo  $R^2$  (Nagelkerke) of .176 was an increase of about 3.5%. As Table A14 shows, helping with homework was the only significant family engagement predictor ( $p < .01$ ): an increase in a unit on the homework predictor scale is associated with a decrease in the odds of enrolling in postsecondary education. High school graduation remained a significant predictor (OR = 4.055,  $p < .001$ ). The odds of postsecondary enrollment among African-American students were significantly higher with the addition of the family engagement variables: students in this group had odds almost twice that of White students. Conversely, when family engagement variables were added, low family income was no longer a significant predictor.

**Positive engagement.** In the fifth and final model for postsecondary enrollment, the positive engagement composite variable was added. The omnibus test of the model with this predictor included was significant ( $\chi^2 = 65.722$ ,  $df = 12$ ,  $p < .001$ ) as was the block chi-square ( $\chi^2 = 7.302$ ,  $df = 1$ ,  $p = .007$ ). This model correctly classified 71.2% of the cases, less than a 1% increase over the previous block, and the pseudo  $R^2$  (Nagelkerke) of .196 was an increase of 2% over model 4. Details of the model are presented in Table A15. The positive engagement scale

was a significant predictor of postsecondary enrollment ( $p < .01$ ): An increase in one unit on the positive engagement scale increases the odds of enrolling in postsecondary institutions by about 10%. Two predictors added in previous steps, high school graduation ( $OR = 3.526$ ,  $p < .001$ ) and helping with homework ( $OR = .788$ ,  $p < .01$ ), continued to be significant predictors in this model. For high school graduates, the odds of having been enrolled in a postsecondary institution were slightly smaller in this step than in the previous step, which suggests that higher levels of engagement during school has some protective impact on students who did not graduate from high school. However, young adults with EBD who graduated from high school were still about three and a half times more likely to have enrolled in a postsecondary institution than those who did not receive a regular diplomas.

***Postsecondary enrollment summary.*** Table 13 (below) shows the model summary for the postsecondary enrollment criterion variable. The final model correctly classified 71.2% of cases, a slight 1.1% increase over the block 1 model. Nonetheless, four of the five steps were statistically significant increases over previous steps: demographic ( $p < .01$ ), high school graduation status ( $p < .001$ ), family engagement ( $p < .05$ ), and positive engagement ( $p < .01$ ).

In the model with only demographic variables, the odds of enrolling in postsecondary institutions were significantly lower for youth from low-income families ( $OR = .409$ ,  $p < .01$ ) than for youth from high-income families. These odds improved with the addition of the high school graduation status variable; and with the addition of the family engagement variables in step 4, students from low-income families had statistically equivalent odds of enrolling in postsecondary compared to students from high-income families. For African-American students, the odds of enrolling in postsecondary education were statistically similar to the odds for White students in the demographic model. The addition of the high school graduation status variable

increased those to statistical significance (OR = 1.823,  $p < .05$ ). The difference in odds was not significant when the negative engagement variable was added but returned to significant levels with the addition of family engagement. With the addition of the positive engagement variable, the odds of attending postsecondary institutions among African-Americans were twice those of White students.

*Table 13: Summary: Odds Ratios of All Predictors for Postsecondary Enrollment (N = 440)*

Variables	Step 1	Step 2	Step 3	Step 4	Step 5
<i>Demographic</i>					
African-American	1.561	1.823*	1.745	1.989*	2.048*
Hispanic	.993	1.118	1.074	1.255	1.223
\$25,000 and under	.409**	.540*	.555*	.627	.552
\$25,001-\$50,000	.631	.686	.686	.692	.651
Female	1.142	.967	.952	1.009	.977
<i>HS graduation status</i>					
Graduate		3.984***	3.894***	4.055***	3.526***
<i>Negative Engagement</i>					
Scale			.946	.954	1.012
<i>Family engagement</i>					
Attending school or class events				1.146	1.120
School communication				.967	.824
Helping with homework				.785**	.788**
Discussing school				1.332	1.337
<i>Positive engagement</i>					
Scale					1.100**

Notes: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

High school graduation status significantly increased the odds of postsecondary enrollment: high school graduates were about four times more likely to report having been enrolled in postsecondary. These odds (OR = 3.526,  $p < .001$ ) decreased somewhat with the addition of the positive engagement variable but remained quite pronounced. The frequency with

which parents assisted their student with homework was found to lower the odds of postsecondary enrollment ( $OR = .785, p < .01$ ), and that remained true with the addition of the positive engagement variable. Positive engagement increased the odds of graduating by 10% for every unit increase on its scale.

### ***Fulltime Employment***

The fulltime employment item asked whether or not youth were working at least 35 hours a week across all their jobs. The fulltime employment criterion variable included five models: demographics, negative engagement, family involvement, behavioral engagement, and emotional engagement. Detailed results for each model for the fulltime employment variable are available in the appendix (tables A16 to A20), and a summary of all models is presented in Table 14.

***Demographics.*** The first model contained the three demographic predictors: race/ethnicity, gender, and family income. The omnibus test of the model with these variables was significant ( $\chi^2 = 39.296, df = 5, p < .001$ ), this model correctly classified 62.1% of the cases, and the pseudo  $R^2$  (Nagelkerke) was .123. Table A16 shows the coefficients, standard errors, and odds ratios for the demographic predictors. The B coefficient (.207) for the reference group (i.e., White, male students with family incomes above \$50,000) was not significant. In terms of race/ethnicity, African-American students' odds of fulltime employment were about three times lower than for White students. The gender variable was also a significant predictor ( $OR = .439, p < .01$ ): The odds of being currently employed fulltime among females ( $OR = .439, p < .01$ ) were more than two times less than that of males.

***High school graduation status.*** The high school graduation status predictor was added in step 2. The omnibus test of the model with this variable added was significant ( $\chi^2 = 39.296, df = 5, p < .001$ ), but the block test was not ( $\chi^2 = .339, df = 1, p = .560$ ). Case classification

percentage and the pseudo  $R^2$  were nearly identical to the previous block. Table A17 shows the coefficients, standard errors, and odds ratios for the high school graduation status predictor. The odds of being employed fulltime for graduates were not significantly different from non-graduates. In this step, the odds of working fulltime for African-American and female students continued to be significantly lower than for White and male students, respectively (both at  $p < .01$ ).

**Negative engagement.** The negative student engagement scale was added in the third step. The omnibus test of this model was significant ( $\chi^2 = 40.920$ ,  $df = 7$ ,  $p < .001$ ), but the model chi-square was not ( $\chi^2 = 1.284$ ,  $df = 1$ ,  $p = .257$ ). Thus, the negative engagement variable did not add statistically predictive value for fulltime employment. This model correctly classified 62.5% of the cases, and the pseudo  $R^2$  (Nagelkerke) was .128; both were very small increases from the previous step. Model details are shown in Table A18. Gender and race/ethnicity continued to be significant; with the addition of the negative engagement variable, odds of being employed fulltime decreased slightly for female and African-American youth compared to male and White youth.

**Family engagement.** In step 4, the four family engagement predictors were added: involvement in school or class events, school-family communication, helping with homework, and discussing school. The omnibus test of the model with the new variables was significant ( $\chi^2 = 49.790$ ,  $df = 11$ ,  $p < .001$ ), but the block chi-square was not statistically significant ( $\chi^2 = 8.870$ ,  $df = 4$ ,  $p = .064$ ). This model correctly classified 62.2% of the cases, a slight decrease from the previous block, and the pseudo  $R^2$  (Nagelkerke) of .154 was an increase of about 3%. As Table A19 shows, attending school and class events was the only significant family engagement predictor ( $p < .05$ ): an increase of a unit on the attending school/class events predictor scale is

associated with an increase of about 17% in the odds of working fulltime. The odds of working fulltime remained lower for African-American and female students compared to White and male students, respectively.

***Positive engagement.*** In the fifth model for fulltime employment, the positive engagement composite variable was added. The omnibus test of the model with this predictor included was significant ( $\chi^2 = 50.103$ ,  $df = 12$ ,  $p < .001$ ), but the block chi-square was not ( $\chi^2 = .313$ ,  $df = 1$ ,  $p = .576$ ). Similar to the previous two steps, the Nagelkerke pseudo-r square (.155) and the percentage of correctly classified cases (62.8%) in this model represented little improvement over step 4. Model details are presented in Table A20. The positive engagement scale was not a significant predictor of fulltime employment. The three predictors with significant odds ratio identified in previous steps continued to be statistically significant in this step. African-American students were about three times less likely than White students to be employed fulltime, and female students were about two times less likely than male students to be employed fulltime. More frequent parent engagement in school and class events was associated with a 16% increase in the odds of being employed fulltime.

***Fulltime employment summary.*** Table 14 (below) shows the summary for the models for the fulltime employment criterion variable. The difference in the percentage of cases correctly classified from model 1 to model 5 was slight (0.7%). The initial block of demographic variables represented a statistically significant improvement over the null block ( $p < .001$ ), but no other model represented a statistically significant improvement over the previous model.



Table 14: Summary: Odds Ratios of All Predictors for Fulltime Employment (N = 410)

Variables	Step 1	Step 2	Step 3	Step 4	Step 5
<i>Demographic</i>					
African-American	.322**	.327**	.308***	.324**	.323**
Hispanic	.952	.967	.925	.993	.982
\$25,000 and under	.599	.615	.633	.685	.674
\$25,001-\$50,000	1.030	1.039	1.039	1.057	1.048
Female	.439**	.432**	.421**	.442**	.440**
<i>HS graduation status</i>					
Graduate		1.142	1.094	1.134	1.094
<i>Negative Engagement</i>					
Scale			.933	.926	.936
<i>Family engagement</i>					
Attending school or class events				1.168*	1.163*
School communication				.878	.850
Helping with homework				.872	.872
Discussing school				.986	.985
<i>Positive engagement</i>					
Scale					1.019

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

Odds ratios for statistically significant predictors remained stable across multiple models of the fulltime employment variable. Thus, the lower odds of fulltime employment in the first step among African-American (OR = .322, p < .01) and female (OR = .439, p < .01) students compared to White and male students, respectively, were virtually identical in the final step. In other words, regardless of high school graduation status or any kind of engagement during school (i.e., negative or positive student engagement, family engagement), African-American students were about three times less likely than White students to report current fulltime employment, and female students were more than two times less likely than males to be

employed fulltime. Neither student engagement scale was a significant predictor; however, one parent involvement predictor (i.e., attending school or class events) was statistically significant ( $p < .05$ ) and remained so after positive student engagement was added. In the final model, an increase in the frequency of parents attending school or class events was associated with a corresponding increase of 16% in the likelihood of being employed fulltime.

### ***Arrest***

The fourth criterion variable under consideration was likelihood of arrest, and the particular item was whether or not students reported ever having been arrested. The arrest variable was examined in five steps: demographic, high school graduation status, negative engagement, family involvement, and emotional engagement. Detailed results for each model for the arrest variable are available in the appendix (tables A21 to A25), and a summary of all models is presented in Table 15.

***Demographics.*** When only the three demographic variables were included for the arrest variable, the omnibus test was significant ( $\chi^2 = 15.549$ ,  $df = 5$ ,  $p < .01$ ), the model correctly classified 57.1% of the cases, and the pseudo  $R^2$  (Nagelkerke) was .048. Family income and gender were statistically significant predictors of having been arrested, as shown in Table A21. The B coefficient (-.172) for the reference group (i.e., White, male students with family incomes above \$50,000) was not significant. The odds ratio for students from low income families was 2.104 ( $p < .01$ ), meaning that they had twice the odds of having been arrested than students from high-income families. The odds ratio for females (OR = .584,  $p < .01$ ) suggests that female students are about 1.7 times less likely than male students to report ever being arrested.

***High school graduation status.*** After adding the high school graduation status predictor in step 2, the omnibus test of the model was significant ( $\chi^2 = 32.434$ ,  $df = 6$ ,  $p < .001$ ), as was the

block test ( $\chi^2 = 16.885$ ,  $df = 1$ ,  $p < .001$ ). This model correctly classified 62.1% of the cases, an increase of 5% compared to the model with only demographic predictors. The pseudo  $R^2$  (Nagelkerke) was .098, also an increase of 5% over the demographic step. Model details are shown in Table A22. Graduation status was a significant predictor of postsecondary enrollment ( $p < .001$ ), and high school graduates were two times less likely to report having ever been arrested. After accounting for high school graduation status, students from families with incomes at or below \$25,000 continued to have significantly higher odds of arrest ( $OR = 1.734$ ,  $p < .05$ ); however, the difference in odds between students from low- and high-income families lessened after accounting for graduation status. Odds ratios for female students were no longer significantly lower than for male students.

***Negative engagement.*** The omnibus test of the model containing the negative engagement scale was significant ( $\chi^2 = 55.387$ ,  $df = 7$ ,  $p < .001$ ), and the model chi-square was significant, as well ( $\chi^2 = 22.954$ ,  $df = 1$ ,  $p < .001$ ). For this model, 64.1% of the cases were correctly identified, which was about 2% more than the previous step, and the pseudo  $R^2$  (Nagelkerke) of .163 was about 6.5% higher than the previous step. Table A23 shows that the negative engagement variable was a significant predictor of arrest ( $p < .001$ ): For every unit increase on the negative engagement scale, the odds of arrest increased by over 30%. With the addition of the negative engagement variable, none of the demographic predictors were significant. High school graduation status remained a significant predictor of arrest ( $OR = .458$ ,  $p < .001$ ), although the difference in odds between graduates and non-graduates was less than in the previous model ( $OR = .416$ ,  $p < .001$ ).

***Family engagement.*** In the next model, the four family engagement predictors were added. The omnibus test of the model with family engagement added was significant ( $\chi^2 =$

62.514,  $df = 11$ ,  $p < .001$ ), but the model chi-square was not ( $\chi^2 = 7.126$ ,  $df = 4$ ,  $p = .129$ ).

The percentage of correctly classified cases (66.0%) and the Nagelkerke pseudo  $R^2$  (.182) represented modest increases over the previous step. None of the family engagement variables were significant predictors of arrest, and high school graduation status and negative engagement continued to be significant predictors. Details are presented in Table A24.

***Positive engagement.*** With the addition of the final predictor, positive engagement, the omnibus test of this model was significant ( $\chi^2 = 66.458$ ,  $df = 12$ ,  $p < .001$ ), as was the model chi-square ( $\chi^2 = 3.944$ ,  $df = 1$ ,  $p < .05$ ). This model correctly classified 65.1% of the cases, a slight decrease from the previous model, and the pseudo  $R^2$  (Nagelkerke) of .193 was slightly higher. As table A25 shows, the emotional engagement variable significantly predicted arrest (OR = .936,  $p < .05$ ): A one-unit increase on the emotional engagement scale corresponded with a 6% decrease in the odds of being arrested. This should be interpreted with some caution, however, given that the uppermost end of the 95% confidence interval is 1.000 (i.e., even odds). Emotional engagement also lessened the predictive value of high school graduation status and negative engagement on arrest.

***Summary of the arrest model.*** Table 15 (below) shows the model summary for the arrest criterion variable. The model with all variables included correctly classified 65.1% of cases, an improvement of 8% over the model with only demographic variables included. Four of the five steps were statistically significant improvements over previous steps: demographic, high school graduation status, negative engagement (all three at  $p < .001$ ), and positive engagement ( $p < .05$ ). The high school graduation status predictor accounted for a gain of 5% in the correct classification of cases.

Table 15: Summary: Odds Ratios of All Predictors for Arrest (N = 420)

Variables	Step 1	Step 2	Step 3	Step 4	Step 5
<i>Demographic</i>					
African-American	1.065	.994	1.279	1.242	1.234
Hispanic	.747	.676	.795	.709	.734
\$25,000 and under	2.104**	1.734*	1.526	1.516	1.632
\$25,001-\$50,000	1.304	1.222	1.216	1.220	1.259
Female	.584*	.642	.655	.674	.689
<i>HS graduation status</i>					
Graduate		.416***	.458***	.505**	.565*
<i>Negative Engagement Scale</i>					
			1.329***	1.321***	1.271***
<i>Family engagement</i>					
Attending school or class events				.971	.991
School communication				.855	.955
Helping with homework				.902	.898
Discussing school				.817	.819
<i>Positive engagement Scale</i>					
					.936*

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

In the model with only demographic variables, students from families with incomes of \$25,000 or less were more than twice as likely to be arrested as students from families with incomes above \$50,000. These odds lessened considerably (OR = 1.734, p < .05) with the addition of the high school graduation status variable and were no longer statistically significant with the addition of the negative engagement variable. In other words, provided they score the same on the negative engagement scale, high school graduates from families with low incomes have about the same odds of arrest as do high school graduates from families with high incomes. Similarly, the significantly lower odds of arrest among female students (OR = .584, p < .05)

compared to males were no longer significant in the high school graduation status model. Thus, for female students who are high school graduates, the odds of arrest are statistically similar to male high school graduates.

In the model including high school graduation status, high school graduates were about two times less likely to be arrested. With each additional model after the high school graduation status predictor was added (i.e., steps 3, 4, and 5), the predictive value of high school graduation status increased. The odds of arrest for high school graduates ( $OR = .505$ ,  $p < .01$ ) increased with the addition of the family involvement predictors. This suggests that, among students with similar scores on the negative engagement scale and similar levels of family engagement on the four variables in the model, high school graduates are two times less likely than non-graduates to have been arrested. With the addition of the positive engagement variable, the difference in odds of arrest between high school graduates and non-graduates lessened once again ( $OR = .565$ ,  $p < .05$ ). In other words, these results suggest that higher degrees of emotional engagement when students are in school lessen the effect of high school graduation status on arrest.

Negative engagement was also found to predict arrest: With each unit increase on the scale, the odds of arrest increased over 30% ( $OR = 1.329$ ,  $p < .001$ ); however, the odds of arrest for the negative engagement scale ( $OR = 1.271$ ,  $p < .001$ ) lessened slightly with the addition of family and positive engagement variables. Odds ratios associated with the family engagement variables were not statistically significant; however, positive student engagement was associated with a decrease in the odds of arrest of about 6% for every unit on the scale.

#### ***Comparing the Final Models for the Four Criterion Variables***

Table 16 (below) shows the final models for each of the four criterion variables. These results suggest that demographic variables, high school graduation status, and student and family engagement predictors function differently depending on the criterion variable.

In terms of demographic variables, significant differences between African-American and White students were found in the postsecondary and fulltime employment models with African-American students having higher odds of postsecondary enrollment and lower odds of fulltime employment, even after accounting for high school graduation status negative student engagement, family engagement, and positive student engagement. Second, a significant difference between students from high- and low-income families was found in the high school graduation model, after accounting for family and student engagement variables. Third, a significant difference between male and female students was found in the fulltime employment model.

High school graduation status, negative student engagement, family engagement, and positive student engagement also had differing predictive value depending on the criterion variable under investigation. For example, high school graduates were 3.5 times more likely to be enrolled in postsecondary institutions, and they were almost two times less likely to be arrested. However, high school graduation status had no significant impact on the likelihood of working fulltime. Higher negative engagement scores were associated with increased odds of being arrested, but negative engagement did not have a significant relationships to the other criterion variables. An increase in the frequency that parents attended school or class meetings was associated with an increase in the odds of fulltime employment, whereas higher rates of parent help with homework was associated with lower odds of enrolling in postsecondary institutions. Other parent engagement variables were insignificant across all models. Finally,

increased levels of positive student engagement were found to significantly predict the odds of both high school graduation and postsecondary enrollment; there was no significant relationship between positive student engagement and fulltime employment.

*Table 16: Comparison of Final Block for Each of the Four Criterion Variables*

Variables	HS Grad (N = 440)	Postsec. (N = 440)	Employ. (N = 410)	Arrest (N = 420)
<i>Demographic</i>				
African-American	.600	2.048*	.323**	1.234
Hispanic	.661	1.223	.982	.734
\$25,000 and under	.296***	.552	.674	1.632
\$25,001-\$50,000	.609	.651	1.048	1.259
Female	1.577	.977	.440**	.689
<i>HS graduation status</i>				
Graduate	--	3.526***	1.094	.565*
<i>Negative Engagement</i>				
Scale	.961	1.012	.936	1.271***
<i>Family engagement</i>				
Attending school or class events	1.034	1.120	1.163*	.991
School communication	.999	.824	.850	.955
Helping with homework	1.138	.788**	.872	.898
Discussing school	1.275	1.337	.985	.819
<i>Positive engagement</i>				
Scale	1.182***	1.100**	1.019	.936*

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

### Summary

Analyses presented in this chapter involved two areas. Cross tabulation results showed that outcomes for students with emotional or behavioral disabilities (EBD) in four key areas (i.e., graduation from high school, postsecondary enrollment, fulltime employment, and arrest) differ based on students' race/ethnicity, gender, and/or family income. However, this initial investigation showed that differences in outcomes by demographic variables vary depending on



the outcome under consideration. For instance, high school graduation and fulltime employment differed based on race/ethnicity with both African-American and Hispanic students having lower high school graduation rates than White students, and African-American students having lower fulltime employment rates than both Hispanic and White students. All four outcomes differed by family income. Rates of high school graduation, postsecondary enrollment, and arrest all followed a pattern of higher percentages of the desirable outcomes (i.e., graduating and being enrolled in postsecondary, not being arrested) for higher family incomes. Youth from low-income families had lower fulltime employment rates than the other two income groups, which were similar in percentage. Finally, fulltime employment and arrest differed based on gender: females were less likely than males to have been employed fulltime and to have been arrested.

Second, results of logistic regression analyses were presented. The predictive value of demographic factors, high school graduation status, negative engagement, family engagement, and positive engagement variables, differed depending on the outcome being considered. The final models for high school graduation and arrest were more successful in correctly classifying cases, whereas the postsecondary enrollment and fulltime employment models had less overall predictive utility. The particular variables with the most significant and meaningful impact on outcomes differed across models. For instance, positive engagement and family income were associated with significant changes in the odds of graduating from high school. Race/ethnicity, high school graduation status, parent engagement through helping with homework, and positive engagement, all had significantly affected the odds of being enrolled in postsecondary institutions. Three predictors were significant in the fulltime employment model: African-American and female students had significantly lower odds of employment, whereas family engagement through attending school or class events was associated with higher odds of fulltime

employment. Finally, high school graduation status, negative engagement, and positive engagement were all significantly related to the odds of arrest.

## **Chapter 5: Discussion**

The transition from high school to adult roles is a challenging one for students with emotional and behavioral disorders (EBD). This study, based on data from the National Longitudinal Transition Study-2 (NLTS2), used stepwise logistic regression to examine the predictive value of demographic and student and family engagement variables on criterion variables measuring four important outcomes for students with EBD: high school graduation, postsecondary enrollment, fulltime employment, and arrest. In what follows, key findings from the results presented in Chapter 4 will be examined in more detail, along with directions for future research. Practical implications of the study will be presented, as well; but first, several important limitations of the study should be considered.

### **Limitations**

Any implications of the present study should be interpreted with some caution, given a number of limitations. First, results presented here are based on self-report measures from the NLTS2. Although they provide detail about parent (and to a lesser extent, youth) perspectives, further research triangulating these reports with student records or teacher reports would strengthen the findings. Next, the manipulation of values through data imputation and recoding strategies is another limitation. Imputing missing data was a strategy to maintain the size of an already limited sample. Although imputation of missing data enabled the analyses to have sufficient power by maintaining a larger sample size, the resultant trade-off is that findings should be interpreted with more caution. In other instances, recoding operations may have skewed results. For example, with respect to family engagement with homework help, the decision to recode values for some participants (i.e., youth who did not receive homework from

teachers, youth attending residential facilities) as not helping with homework may have biased this variable.

The selection of variables was also a study limitation. Although the number of predictors was restricted by the sample size and method of analysis, additional variables not considered—such as number of suspensions/expulsions, educational setting (e.g., general education classroom, separate classroom, separate school), academic or behavioral skill level, or number of schools attended—could be important predictors of postschool outcomes for students with EBD and should be examined in future research. Many of these variables were available in NLTS2, but the amount of missing data would have biased results and/or reduced the sample size considerably. Information on one key variable, attendance rate, which has been recognized as an important contributor to student disengagement in conceptual (Appleton, Christenson, & Furlong, 2008; Fredricks, Blumenfeld, & Paris, 2004) and empirical (Finn, 1989; Sinclair, Christenson, & Thurlow, 2005) studies, was not available in the NLTS2 data set. In addition, the postsecondary enrollment variable includes students attending a range of institutions (i.e., college or vocational training). It should be noted that students with EBD are far more likely to attend vocational or 2-year institutions than 4-year institutions (Newman et al., 2009).

The study's sample size is another limitation. As noted, the limited sample size had important ramifications for the overall study design, particularly due to the constraints it placed on the number of predictors. However, the sample was also limited for certain racial/ethnic groups. Sample size was a particular concern with respect to the low number of Hispanic students. Further research should be conducted to examine the relationship between family and students engagement predictors and post school outcomes for Hispanic students with EBD. Furthermore, this study only considered White, African-American, and Hispanic students;

additional research is needed to examine the role of student and family engagement among Asian and Native American students with EBD, as well.

Sample size limitations and the resultant limit on the number of predictors included in the models, entailed conceptual limitations, as well. The primary conceptual limitation of this study involved the selection and grouping of predictor variables. The solution of using scales for negative and positive student engagement enabled the inclusion of family engagement and demographic variables, but it came at the cost of conceptual clarity: the relative contribution of the various items in the scale could not be parceled out. For example, predictor variables with moderate to strong correlations with criterion variables may have contributed more to the scale than those with weaker or statistically insignificant correlations. On a more general note, the NLTS2 study design was not focused on student engagement; future data collected with a nationally representative sample of students with EBD should focus more deliberately on this important construct. Conceptual and other limitations should be considered when examining several key findings from the study.

### **Key Findings**

In this section, additional detail will be provided on findings in four central areas: the disparate outcomes for students with EBD by race/ethnicity, family income, and gender; the important role that high school graduation played in the models; the paucity of conclusive findings related to family engagement; and the key role that positive and negative student engagement appeared to have. In each area, relationships between the predictor and criterion variables will be examined in more detail, and suggestions for future research will be offered.

#### ***Disparate Outcomes and Intersectionality***

The study's stepwise design provided results showing that, in some instances, statistically significant differences in odds ratios for gender and family income are lessened or negated by high school graduation status and negative engagement. First, odds of graduating from high school were significantly higher for females in the initial block and remained so with the addition of the negative engagement and family engagement variables. However, when positive student engagement was taken into account, the difference was reduced to chance level. This suggests that positive student engagement cancels out the differential impact of gender on high school graduation. Second, the odds of enrolling in postsecondary institutions were initially lower for students from families with incomes of \$25,000 or less than for students from families with incomes above \$50,000. With the addition of high school graduation status and family engagement variables, these odds were no longer significant. Finally, in the initial block for arrest, youth from low income families had significantly higher odds ratios for arrest and female students had significantly lower odds of arrest. Odds of arrest for low-income students were double those of high-income students. Female students were nearly two times less likely to be arrested than males. However, family income was no longer significant after accounting for graduation status and negative engagement, and gender was no longer significant after accounting for high school graduation status.

In other instances, the relationships between statistically significant demographic predictors and criterion variables remained robust even after the inclusion of high school graduation status, negative student engagement, family engagement, and positive student engagement variables in the model. For instance, youth with EBD from families with incomes of \$25,000 were found to have significantly lower odds of graduating from high school than youth from families with incomes above \$50,000: odds of graduating for low-income youth were more

than three times lower than for students from families with incomes over \$50,000. Second, across all models, African-American youth with EBD had significantly higher odds of attending postsecondary enrollment than White youth. Third, African-American youth had significantly lower odds of being employed fulltime regardless of the inclusion of family and student engagement variables in the models. Finally, female youth with EBD had significantly lower odds of being employed fulltime than male youth, differential odds that persisted across models. These findings do not support the hypothesis that family and student engagement mitigate the effects associated with race/ethnicity, gender, and family income.

These varied results provide support for intersectional approaches accounting for the complex manner in which race/ethnicity, gender, and family income are related to disability. It is important for future research employing intersectional analyses to provide further insight into the ways that race/ethnicity, family income, and gender contribute differently to outcomes for youth with disabilities.

### ***High School Graduation***

Results from this study confirm that high school graduation status is a key predictor of postschool outcomes as students with EBD transition into adult roles. High school graduates were three and a half times more likely to report having been enrolled in postsecondary education after high school. Conversely, the odds of having been arrested were significantly lower for graduates. In both models, the relationship remained significant after including the family and student engagement predictors.

The link between high school graduation status and postsecondary enrollment is not surprising, given the fact that many postsecondary institutions require their enrollees to be high school graduates. In addition, the academic skills that persistence in high school requires

translate readily into postsecondary settings. However, the relationship between high school graduation status and arrest is perhaps more noteworthy: high school graduates were almost two times less likely to report that they had been arrested. Thus, graduating from high school can be viewed as a protective factor lessening the likelihood of involvement with the criminal justice system.

Given the consequential nature of high school graduation for postsecondary enrollment and arrest, it is important to note the predictive value of positive student engagement in the high school graduation model. A unit increase in the positive engagement scale was associated with an 18% increase in the odds graduating from high school. These data suggest that efforts directed at increasing positive student engagement when students are in school could lead to increases in the likelihood that students will enroll in postsecondary education and decreases in the likelihood of arrest. Findings here are consistent with a large body of prior research emphasizing the pivotal role that high school graduation plays in students adult life trajectories. However, as Reschly and Christenson (2006) note, much of the prior research on dropout and high school completion ignores students with disabilities. More research is needed examining school challenges that may be unique or exacerbated among students with disabilities (and particularly EBD) and that result in disengagement from school.

### ***Family Engagement***

Results for the family engagement variables were mixed. First, increases in the frequency with which parents attended school or class events was associated with increased odds of fulltime employment. Second, the level of school-parent communication was associated with significantly higher odds of graduating from high school when initially added to the model; however, this relationship was not significant when positive engagement was added. Finally,



higher rates of parents helping with homework were associated with a statistically significant decrease in the odds of being enrolled in a postsecondary institution. This surprising finding could be explained by a couple of factors. Beyond the recoding practice noted above, perhaps students who are receiving more homework assistance are struggling with their courses and at greater risk of school failure despite parent assistance. An alternate explanation may be that the higher rate of assistance inhibits the acquisition of independent study skills that might be associated with postsecondary enrollment. In either case, further research is necessary to more carefully examine the relationship between frequency of parent homework help and post school outcomes. Elsewhere, family involvement predictors were not statistically significant.

Overall, this study offers little evidence that family engagement predicts high school graduation, fulltime employment, postsecondary enrollment, or arrest. The magnitude of correlations between family involvement and criterion variables were either relatively small or not statistically significant. Even after limiting predictor variable inclusion to those family involvement variables that correlated most strongly with criterion variables, few family involvement variables made statistically significant contributions to the models. Perhaps more than any other finding, the family engagement results should be interpreted with caution given the limitations of the study. Prior research on family engagement for transition-age youth with disabilities (Lindstrom, Doren, Metheny, Johnson, & Zane, 2007) offers some perspective on these findings. In examining the relationship between family involvement processes and youth career development, Lindstrom and colleagues found that “high participation did not always equate to active family support or advocacy for the young adults' career interests and transition needs” (p. 358). More research examining the predictive value of parent advocacy (and its

relationship to parent engagement) is important to better understanding the ways that family support contributes to post school outcomes among students with EBD and other disabilities.

### ***Student Engagement***

Both student engagement scales included in the models—negative engagement and positive engagement—were found to have acceptable reliability. Negative engagement was a robust predictor for arrest, with higher scores on the scale associated with an increased likelihood of arrest. The positive engagement predictor contributed to three models: high school graduation, postsecondary enrollment, and arrest. Positive engagement significantly increased the odds of high school graduation and postsecondary enrollment and significantly decreased the odds of being arrested. In addition, results from the high school graduation model showed that positive engagement, when combined with the less powerful effect of the four parent engagement variables, reduced negative engagement to non-significance.

Neither the negative nor the positive student engagement scale was a significant predictor for the fulltime employment criterion variable. The cause of this unexpected finding is beyond the scope of the study; however, it may be that pathways to employment differ for students who are engaged and students who are disengaged. Although for some students engagement with school may lead to the development of skills and attitudes to support them in gaining fulltime employment, for other students, disengagement from school may lead them to withdraw from school and pursue success in employment. This dual path to fulltime employment (i.e., achieving fulltime employment through engagement and disengagement) is compatible with data showing that employment outcomes for students with EBD are more equivocal than outcomes in other areas (Newman et al., 2009) with students with EBD showing higher pay rates and fulltime employment rates than many other disability groups.

Additional research should examine more nuanced forms of student engagement. The conceptual framework for engagement in this study—that the poor high school graduation rates and post-high school outcomes of students with EBD are worsened by negative engagement and improved by parent and student engagement (Finn, 1989)—is rudimentary in comparison to more recent conceptual work on the student engagement construct. Future research should draw from recent work examining three- (Fredricks et al., 2004) and four-part (Appleton, Christenson, Kim, & Reschley, 2006) definitions of engagement in developing and refining engagement programming for students with EBD. This work has already begun with the *Check and Connect* model, which has been shown to improve graduation rates among students with EBD (Sinclair, Christenson, & Thurlow, 2005).

### **Implications for Practice**

This study has important implications for practitioners. First, given the disparate outcomes for students with EBD based on race/ethnicity, gender, and family income, it is important for practitioners to ensure that instruction is effective for all students. Results from this study show that African-American students with EBD have lower odds of attaining fulltime employment, that students with EBD from low-income families have decreased odds of graduating from high school and enrolling in postsecondary school, and that female students with EBD have lower fulltime employment rates. These results echo calls for culturally responsive practices for transition-age students with disabilities (Geenen, Powers, Lopez Vasquez, & Bersani, 2003) requiring that practitioners recognize the complex intersections of race/ethnicity, gender, family income, and disability.

Second, graduating from high school was identified as an important factor for increasing the odds of enrollment in postsecondary education and fulltime employment and decreasing the

odds of arrest. These findings echo prior research and policy studies arguing that high school graduation is a vital outcome for all students (e.g., Amos, 2008; Finn, 1989), particularly students with EBD (e.g., Reschly & Christenson, 2006). Given the distressingly low high school graduation rates among students with EBD, instructional programs aimed at encouraging students to stay in school should surely be increased. Regrettably, there is currently a shortage of coherent, evidence-based dropout prevention programs; however, teachers should familiarize themselves with student engagement-based programming, such as *Check and Connect*, that has been shown to be effective with students with EBD (Sinclair et al., 2005).

This study offers additional support for student engagement as a method for increasing graduation rates. Findings reported here suggest that instructional practices and programs for students with EBD should be directed at increasing positive student engagement and decreasing negative engagement. Given the robust relationship between the positive engagement scale and three of the four criterion variables (i.e., high school graduation, postsecondary enrollment, and arrest), practitioners should work to make sure students with EBD feel that they are receiving individualized support at school. Positive engagement can be increased by (a) facilitating trusting relationships between students and teachers or other adults and (b) facilitating student involvement in school activities outside of the classroom (e.g., extracurricular activities). Practitioners should also be mindful of the deleterious effects of negative engagement on post school outcomes for youth with EBD and work to create a safe school and classroom culture. As other research has shown, student misbehavior can be predicted by a lack of student connectedness to school (Jenkins, 1995). Finally, the high correlations between suspension or expulsion and student outcomes presented in this study suggest that school responses to negative behavior be directed at keeping students in school.

## **Summary**

Limitations, key findings, and implications were presented in this chapter. In particular, shortcomings of the NLTS2 data set, study design concerns (especially selection of variables), and conceptual matters were discussed. The study resulted in important findings in four areas: disparate outcomes by demographic variables, the importance of high school graduation for later postschool outcome, the relative paucity of results supporting family engagement as a predictor of positive postschool outcomes, and the value of student engagement (both positive and negative) variables for predicting outcomes among students with EBD. Results were discussed in detail, and suggestions for additional research were offered. Finally, practical implications in three areas were offered: culturally responsive practices, high school graduation programming, and student engagement.

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## Additional Tables

*Table A1: Correlations for demographic and criterion variables*

Measure	1	2	3	4	5	6
1. Race/ethnicity	--					
2. Family income	-.352**	--				
3. Gender	.061	-.010	--			
4. HS Graduation	-.165**	.240**	.078	--		
5. Enrolled in postsecondary since high school	-.011	-.128**	.032	.295**	--	
6. Employed fulltime	-.149**	-.144**	-.201**	.052	-.011	--
7. Ever arrested	.023	-.106*	-.099*	.232**	-.085	-.056

Note: \* $p < .05$ , \*\* $p < .01$

*Table A2: Correlations Between Negative Engagement and Criterion Variables*

Measure	1	2	3	4	5	6	7
1. Physically attacked at school	--						
2. Been bullied at school	.375**	--					
3. Bullied others at school	.328**	.298**	--				
4. Had things stolen at school	.297**	.380**	.144**	--			
5. Been teased at school	.378**	.493**	.362**	.276**	--		
6. Ever been suspended or expelled	.271**	.088	.250**	.070	.128**	--	
7. Scale	.699**	.702**	.616**	.568**	.717**	.468**	--
8. Graduated from high school	-.115*	-.057	-.101*	-.050	.026	-.142**	-.112*
9. Enrolled in postsecondary since high school	.021	-.039	-.079	-.004	-.046	-.070	-.058
10. Employed currently	-.030	-.023	.013	-.16	-.018	-.007	-.020
11. Ever arrested	.199**	.070	.237**	.093*	.123**	.313**	-.266**

Note: \* $p < .05$ , \*\* $p < .01$

Table A3: Correlations Between Emotional Engagement and Criterion Variables

Measure	1	2	3	4	5	6	7	8	9
1. Enjoys school	--								
2. Gets along with other children	.300**	--							
3. Gets along with teachers	.334**	.286**	--						
4. Adult at school cares about youth	.208**	.075	.203**	--					
5. Getting needed support and services	.359**	.216**	.342**	.401**	--				
6. School meets individual needs	.333**	.270**	.339**	.480**	.757**	--			
7. School activities outside of class	.093*	.084	.022	.098*	.034	.077	--		
8. Grades/school work	.428**	.136**	.283**	.148**	.278**	.264**	.020	--	
9. Scale	.675**	.498**	.596**	.527**	.707**	.735**	.218**	.603**	--
10. Graduated from high school	.093*	.056	.219**	.211**	.228**	.198**	.072	.273**	.307**
11. Postsecondary enrollment	.145*	.145**	.034	.104*	.106*	.106*	.201**	.144**	.203**
12. Fulltime employment	-.049	.092	-.030	.037	-0.37	-.008	.083	.018	.005
13. Ever arrested	-.206**	-.157**	-.223**	-.109*	-.124**	-.114*	-.028	-.115*	-.247**

Note: \* $p < .05$ , \*\* $p < .01$

*Table A4: Cross Tabulations of race/ethnicity, gender, and family income by negative student engagement predictors*

	Race/Ethnicity			Family Income			Gender	
	White	Afr. – Amer.	Hisp.	≤ \$25,000	\$25,000-\$50,000	> \$50,000	Male	Female
Physically attacked	0.39	0.30	0.45	0.40	0.38	0.33	0.38	0.35
Been bullied	0.49	0.17***	0.30*	0.38	0.42	0.41	0.41	0.38
Bullied others	0.35	0.29	0.24	0.36	0.31	0.29	0.34	0.28
Had things stolen	0.36	0.27	0.42	0.34	0.36	0.34	0.37	0.29
Been teased	0.69	0.52**	0.53	0.63	0.64	0.66	0.64	0.64
Suspended or expelled	0.70	0.77	0.73	0.80*	0.65	0.68	0.75	0.61**
Scale <sup>a</sup>	2.97	2.32**	2.68	2.92	2.76	2.70	2.89	2.56

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001; values are mean scores; scale range is 0-6; for all other items, range is 0-1

<sup>a</sup> included in logistic regression models

*Table A5: Cross Tabulations of race/ethnicity, gender, and family income by family engagement predictors*

	Race/Ethnicity			Family Income			Gender	
	White	Afr.–Amer.	Hisp.	≤ \$25,000	\$25,001- \$50,000	>\$50,000	Male	Female
General School Meetings	1.32	1.24	0.84*	1.09	1.39	1.33	1.30	1.15
Parent/teacher conferences	1.45	1.24	1.07	1.29*	1.22**	1.61	1.36	1.38
School or class events <sup>a</sup>	1.46	0.92**	0.79**	0.91***	1.44	1.58	1.27	1.31
Volunteered at school	0.46	0.49	0.32	0.29	0.62	0.48	0.47	0.42
School/parent comm. <sup>a</sup>	3.13	3.23	3.00	3.10	3.18	3.14	3.13	3.18
Attended IEP meeting	0.91	0.76**	0.72**	0.80***	0.86*	0.94	0.85	0.87
Helped with homework <sup>a</sup>	2.66	2.75	2.55	2.71	2.63	2.67	2.59	2.89*
Discussed school <sup>a</sup>	3.76	3.55*	3.38*	3.56**	3.67*	3.84	3.67	3.71
Participated in programs	0.46	0.38	0.25**	0.34**	0.45	0.51	0.42	0.45
Belong to support group	0.13	0.16	0.06	0.11*	0.10*	0.19	0.11	0.17

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001; values are mean scores; response ranges vary depending on the predictors (see Table 3);

<sup>a</sup> included in logistic regression models



*Table A6: Cross Tabulations of race/ethnicity, gender, and family income by positive student engagement predictors*

	Race/Ethnicity			Family Income			Gender	
	White	Afr. –Amer.	Hisp.	≤ \$25,000	\$25,000- \$50,000	> \$50,000	Male	Female
Enjoys school	2.44	2.81**	2.79*	2.61	2.48	2.56	2.55	2.57
Gets along with other children	2.86	3.00	3.05	2.88	2.97	2.89	2.93	2.86
Gets along with teachers	3.05	3.06	3.05	3.00	3.10	3.07	3.02	3.15
Adult at school cares about youth	3.29	3.14	3.10	3.15	3.27	3.32	3.22	3.31
Gets needed support and services	2.88	3.03	2.92	2.98*	2.95	2.79	2.92	2.89
School meets individual needs	2.84	2.89	2.87	2.94*	2.88	2.72	2.82	2.97
Participated in school activities outside of class	0.37	0.34	0.30	0.37	0.31	0.40	0.33	0.44*
Grades/school work	2.81	2.83	2.90	2.79	2.77	2.91	2.71	3.13***
Scale <sup>a</sup>	20.56	21.10	20.98	20.74	20.73	20.66	20.50	21.32

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001; values are mean scores; scale range is 11-29; ranges for other predictors vary (see Table 3)

<sup>a</sup> included in logistic regression models

Table A7: Demographic Predictors of High School Graduation (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	1.055***	.218	2.871	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	-.387	.266	.679	.403-1.144
Hispanic	-.404	.353	.667	.334-1.332
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-1.171***	.277	.310	.180-.533
\$25,000-\$50,000	-.440	.278	.644	.374-1.110
<i>Gender</i> <sup>c</sup>				
Female	.577*	.245	1.781	1.102-2.878

Notes: \*p < .05, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .111

Correctly Classified = 63.4%

Table A8: Negative Engagement Predictor of High School Graduation (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	1.553***	.289	4.727	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	-.546*	.274	.579	.338-.992
Hispanic	-.500	.357	.607	.302-1.220
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-1.104***	.279	.332	.192-.573
\$25,000-\$50,000	-.436	.280	.646	.373-1.119
<i>Gender</i> <sup>c</sup>				
Female	.558*	.248	1.748	1.074-2.842
<i>Negative Engagement</i>				
Scale	-.165**	.060	.848	.754-.953

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .133

Correctly Classified = 65.7%

Table A9: Family Engagement Predictors of High School Graduation (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-.833	.714	.435	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	-.515	.283	.598	.343-1.041
Hispanic	-.322	.368	.725	.352-1.492
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	-1.046***	.287	.351	.200-.617
\$25,000-\$50,000	-.439	.287	.644	.367-1.130
<i>Gender<sup>c</sup></i>				
Female	.528*	.254	1.696	1.031-2.790
<i>Negative Engagement</i>				
Scale	-.146*	.062	.864	.765-.977
<i>Family Engagement</i>				
School and class events	.100	.076	1.105	.952-1.283
School-parent communication	.278*	.110	1.320	1.065-1.637
Help with homework	.127	.079	1.135	.973-1.325
Discuss school	.267	.142	1.306	.989-1.724

Notes: \*p < .05, \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .178

Correctly Classified = 68.5%

Table A10: Positive Engagement Predictor of High School Graduation (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-3.415***	.911	.033	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	-.510	.290	.600	.340-1.059
Hispanic	-.414	.382	.661	.313-1.396
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	-1.217***	.301	.296	.164-.534
\$25,000-\$50,000	-.495	.296	.609	.341-1.089
<i>Gender<sup>c</sup></i>				
Female	.455	.261	1.577	.946-2.628
<i>Negative Engagement</i>				
Scale	-.040	.067	.961	.842-1.096
<i>Family Engagement</i>				
School and class events	.034	.080	1.034	.885-1.209
School-parent communication	-.001	.126	.999	.780-1.280
Help with homework	.129	.081	1.138	.971-1.334
Discuss school	.243	.145	1.275	.960-1.694
<i>Positive Engagement</i>				
Scale	.167***	.911	1.182	1.103-1.267

Notes: \*p < .05, \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .243

Correctly Classified = 70.9%

*Table A11: Demographic Predictors of Postsecondary Enrollment (N = 440)*

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-.437*	.196	.646	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	.446	.280	1.561	.902-2.702
Hispanic	-.007	.396	.993	.457-2.159
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-.895**	.279	.409	.237-.706
\$25,000-\$50,000	-.461	.261	.631	.378-1.052
<i>Gender</i> <sup>c</sup>				
Female	.133	.236	1.142	.719-1.814

Notes: \*p < .05, \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .039

Correctly Classified = 70.1%

Table A12: High School Graduation Status Predictor of Postsecondary Enrollment (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-1.503***	.294	.223	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	.600*	.296	1.823	1.021-3.255
Hispanic	.112	.413	1.118	.498-2.513
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-.617*	.292	.540	.305-.956
\$25,000-\$50,000	-.377	.270	.686	.404-1.165
<i>Gender</i> <sup>c</sup>				
Female	-.033	.247	.967	.596-1.569
<i>HS graduation status</i>				
Graduate	1.382***	.259	3.984	2.398-6.621

Notes: \*p < .05, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .136

Correctly Classified = 69.4%

Table A13: Negative Engagement Predictor of Postsecondary Enrollment (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-1.328	.353	.265	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	.557	.300	1.745	.969-3.141
Hispanic	.071	.417	1.074	.474-2.430
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-.589*	.294	.555	.312-.986
\$25,000-\$50,000	-.377	.271	.686	.404-1.166
<i>Gender</i> <sup>c</sup>				
Female	-.049	.248	.952	.585-1.547
<i>HS graduation status</i>				
Graduate	1.359***	.261	3.894	2.337-6.490
<i>Negative Engagement</i>				
Scale	-.055	.063	.946	.837-1.070

Notes: \*p < .05, \*\*\* p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .139

Correctly Classified = 69.0%



Table A14: Family Engagement Predictors of Postsecondary Enrollment (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-1.990*	.839	.137	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	.687*	.311	1.989	1.081-3.658
Hispanic	.227	.428	1.255	.542-2.904
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	-.467	.300	.627	.348-1.130
\$25,000-\$50,000	-.369	.277	.692	.402-1.190
<i>Gender<sup>c</sup></i>				
Female	.009	.254	1.009	.614-1.658
<i>HS graduation status</i>				
Graduate	1.400***	.270	4.055	2.389-6.881
<i>Negative Engagement</i>				
Scale	-.047	.065	.954	.839-1.084
<i>Family Engagement</i>				
School and class events	.136	.076	1.146	.987-1.330
School-parent communication	-.034	.118	.967	.767-1.218
Help with homework	-.242**	.085	.785	.665-.927
Discuss school	.287	.172	1.332	.950-1.867

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .176

Correctly Classified = 70.8%

Table A15: Positive Engagement Predictor of Postsecondary Enrollment (N = 440)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-3.488	1.026	.031	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	.717*	.316	2.048	1.103-3.803
Hispanic	.201	.432	1.223	.525-2.852
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	-.593 (p = .054)	.308	.552	.302-1.010
\$25,000-\$50,000	-.430	.280	.651	.376-1.126
<i>Gender<sup>c</sup></i>				
Female	-.024	.256	.977	.591-1.613
<i>HS graduation status</i>				
Graduate	1.260***	.276	3.526	2.053-6.056
<i>Negative Engagement</i>				
Scale	.011	.069	1.012	.883-1.159
<i>Family Engagement</i>				
School and class events	.113	.077	1.120	.963-1.302
School-parent communication	-.193	.133	.824	.635-1.069
Help with homework	-.239**	.085	.788	.666-.931
Discuss school	.291	.174	1.337	.950-1.882
<i>Positive Engagement</i>				
Scale	.096**	.036	1.100	1.025-1.181

Notes: \*p < .05, \*\*p < .01, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .196

Correctly Classified = 71.2%

*Table A16: Demographic Predictors of Fulltime Employment (N = 410)*

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	.207	.199	1.230	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	-1.133**	.326	.322	.265-.728
Hispanic	-.049	.364	.952	.466-1.944
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-.512	.277	.599	.348-1.031
\$25,000-\$50,000	.030	.259	1.030	.620-1.712
<i>Gender</i> <sup>c</sup>				
Female	-.822**	.258	.439	.265-.728

Notes: \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .123

Correctly Classified = 62.1%

Table A17: High School Graduation Status Predictor of Fulltime Employment (N = 410)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	.110	.259	1.116	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	-1.119**	.327	.327	.172-.620
Hispanic	-.034	.365	.967	.472-1.979
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-.487	.280	.615	.355-1.065
\$25,000-\$50,000	.038	.259	1.039	.625-1.728
<i>Gender</i> <sup>c</sup>				
Female	-.839**	.259	.432	.260-.718
<i>HS graduation status</i>				
Graduate	.133	.228	1.142	.731-1.784

Notes: \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .124

Correctly Classified = 62.1%

*Table A18: Negative Engagement Predictor of Fulltime Employment (N = 410)*

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	.343	.331	1.409	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	-1.177***	.332	.308	.161-.591
Hispanic	-.078	.369	.925	.449-1.906
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	-.458	.282	.633	.364-1.100
\$25,000-\$50,000	.039	.260	1.039	.625-1.730
<i>Gender</i> <sup>c</sup>				
Female	-.865**	.261	.421	.252-.702
<i>HS graduation status</i>				
Graduate	.090	.231	1.094	.696-1.721
<i>Negative Engagement</i>				
Scale	-.069	.061	.933	.828-1.052

Notes: \*\*p < .01, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .128

Correctly Classified = 62.5%

Table A19: Family Engagement Predictors of Fulltime Employment (N = 410)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	.896	.733	2.450	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	-1.127**	.336	.324	.168-.627
Hispanic	-.007	.376	.993	.475-2.075
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	-.378	.288	.685	.390-1.204
\$25,000-\$50,000	.055	.264	1.057	.630-1.774
<i>Gender<sup>c</sup></i>				
Female	-.817**	.266	.442	.262-.744
<i>HS graduation status</i>				
Graduate	.125	.240	1.134	.709-1.813
<i>Negative Engagement</i>				
Scale	-.077	.063	.926	.818-1.048
<i>Family Involvement</i>				
School and class events	.155*	.074	1.168	1.010-1.350
School-parent communication	-.130	.113	.878	.704-1.095
Help with homework	-.137	.081	.872	.743-1.022
Discuss school	-.014	.733	.986	.737-1.320

Notes: \*p < .05, \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .154

Correctly Classified = 62.2%

Table A20: Positive Engagement Predictor of Fulltime Employment (N = 410)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	.616	.887	1.852	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	-1.130**	.337	.323	.167-.624
Hispanic	-.018	.377	.982	.469-2.055
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	-.394	.289	.674	.382-1.188
\$25,000-\$50,000	.047	.265	1.048	.624-1.761
<i>Gender<sup>c</sup></i>				
Female	-.822**	.266	.440	.261-.741
<i>HS graduation status</i>				
Graduate	.090	.248	1.094	.673-1.779
<i>Negative Engagement</i>				
Scale	-.066	.066	.936	.822-1.066
<i>Family Involvement</i>				
School and class events	.151*	.074	1.163	1.005-1.346
School-parent communication	-.162	.127	.850	.663-1.090
Help with homework	-.138	.081	.872	.743-1.022
Discuss school	-.015	.149	.985	.736-1.318
<i>Positive Engagement</i>				
Scale	.019	.034	1.019	.954-1.089

Notes: \*p < .05, \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .155

Correctly Classified = 62.8%

Table A21: Demographic Predictors of Arrest (N = 420)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-.172	.193	.842	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	.063	.270	1.065	.627-1.808
Hispanic	-.292	.356	.747	.372-1.501
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	.744**	.262	2.104	1.258-3.517
\$25,000-\$50,000	.266	.252	1.304	..796-2.138
<i>Gender</i> <sup>c</sup>				
Female	-.537*	.230	.584	.372-.918

Notes: \*p < .05, \*\*p < .01

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .048

Correctly Classified = 57.1%



Table A22: High School Graduation Status Predictor of Arrest (N = 420)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	.473	.254	1.605	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	-.006	.278	.994	.577-1.713
Hispanic	-.391	.365	.676	.331-1.383
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	.550*	.271	1.734	1.019-2.949
\$25,000-\$50,000	.200	.258	1.222	.737-2.024
<i>Gender</i> <sup>c</sup>				
Female	-.444	.236	.642	.404-1.019
<i>HS graduation status</i>				
Graduate	-.878***	.216	.416	.272-.635

Notes: \*p < .05, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .098

Correctly Classified = 62.1%

Table A23: Negative Engagement Predictor of Arrest (N = 420)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	-.417	.320	.659	
<i>Race/Ethnicity</i> <sup>a</sup>				
African-American	.246	.289	1.279	.727-2.251
Hispanic	-.230	.379	.795	.727-2.251
<i>Family Income</i> <sup>b</sup>				
≤ \$25,000	.423	.279	1.526	.883-2.638
\$25,000-\$50,000	.196	.265	1.216	.723-2.046
<i>Gender</i> <sup>c</sup>				
Female	-.423	.243	.655	.407-1.055
<i>HS graduation status</i>				
Graduate	-.781***	.223	.458	.296-.708
<i>Negative Engagement</i>				
Scale	.284***	.061	1.329	1.179-1.498

Notes: \*\*\* p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .163

Correctly Classified = 64.1%

Table A24: Family Engagement Predictors of Arrest (N = 420)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	1.100	.728	3.004	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	.216	.293	1.242	.700-2.204
Hispanic	-.344	.387	.709	.332-1.514
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	.416	.285	1.516	.868-2.648
\$25,000-\$50,000	.199	.268	1.220	.722-2.063
<i>Gender<sup>c</sup></i>				
Female	-.394	.246	.674	.416-1.093
<i>HS graduation status</i>				
Graduate	-.684**	.227	.505	.323-.788
<i>Negative Engagement</i>				
Scale	.278***	.063	1.321	1.168-1.494
<i>Family Engagement</i>				
School and class events	-.029	.074	.971	.839-1.124
School-parent communication	-.157	.110	.855	.689-1.062
Help with homework	-.104	.078	.902	.773-1.052
Discuss school	-.202	.150	.817	.609-1.095

Notes: \*\*p < .01, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .182

Correctly Classified = 66.0%

Table A25: Positive Engagement Predictor of Arrest (N = 420)

Predictor	B	SE	Odds Ratio	95% C.I. for Odds Ratio
Constant	2.084	.888	8.037	
<i>Race/Ethnicity<sup>a</sup></i>				
African-American	.210	.294	1.234	.693-2.196
Hispanic	-.309	.390	.734	.693-2.196
<i>Family Income<sup>b</sup></i>				
≤ \$25,000	.490	.289	1.632	.926-2.876
\$25,000-\$50,000	.231	.270	1.259	.742-2.137
<i>Gender<sup>c</sup></i>				
Female	-.373	.248	.689	.424-1.119
<i>HS graduation status</i>				
Graduate	-.571*	.235	.565	.357-.894
<i>Negative Engagement</i>				
Scale	.240***	.066	1.271	1.118-1.445
<i>Family Engagement</i>				
School and class events	-.009	.075	.991	.855-1.148
School-parent communication	-.046	.124	.955	.750-1.217
Help with homework	-.108	.079	.898	.769-1.048
Discuss school	-.200	.151	.819	.610-1.100
<i>Positive Engagement</i>				
Scale	-.066*	.033	.936	.877-1.000

Notes: \*p < .05, \*\*\*p < .001

<sup>a</sup> Reference group is White students

<sup>b</sup> Reference group is family income above \$50,000

<sup>c</sup> Reference group is male students

Nagelkerke r-square = .193

Correctly Classified = 65.1%

## Approval Letter from the Human Subjects Committee-Lawrence

11/3/2010

HSCL #19010

Zach McCall  
SPED  
J.R. Pearson Hall

The Human Subjects Committee Lawrence Campus (HSCL) has received your response to its expedited review of your research project

19010 McCall/Morningstar (SPED) Predictors of Postschool Outcomes for Students with Emotional/Behavioral Disabilities: Race/Ethnicity, Family Income, Family Involvement, and Transition Services

and approved this project under the expedited procedure provided in 45 CFR 46.110 (f) (7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Since your research presents no risk to participants and involves no procedures for which written consent is normally required outside of the research context HSCL has waived the requirement for a signed consent form (45 CFR 46.117 (c) (2)). HSCL notes study data will be de-identified.

1. At designated intervals until the project is completed, a Project Status Report must be returned to the HSCL office.
2. Any significant change in the experimental procedure as described should be reviewed by this Committee prior to altering the project.
3. Notify HSCL about any new investigators not named in original application. Note that new investigators must take the online tutorial at [http://www.rcr.ku.edu/hsc/hsp\\_tutorial/000.shtml](http://www.rcr.ku.edu/hsc/hsp_tutorial/000.shtml).
4. Any injury to a subject because of the research procedure must be reported to the Committee immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform HSCL when this project is terminated. You must also provide HSCL with an annual status report to maintain HSCL approval. Unless renewed, approval lapses one year after approval date. If your project receives funding which requests an annual update approval, you must request this from HSCL one month prior to the annual update. Thanks for your cooperation. If you have any questions, please contact me.

Sincerely,

Mary Denning  
Coordinator

Human Subjects Committee Lawrence  
cc: Mary Morningstar